ABSTRACT OF

The Fitz-Patrick Lectures

ON

THE HISTORY OF THE STUDY OF CLINICAL MEDICINE IN THE BRITISH ISLANDS.[1]

Delivered before the Royal College of Physicians of London on Nov. 8th and 13th, 1906,

By NORMAN MOORE, M.D. CANTAB.,
FELLOW OF THE COLLEGE AND PHYSICIAN TO ST. BARTHOLOMEW'S HOSPITAL.

LECTURE I.

Delivered on Nov. 8th.

MR. PRESIDENT, CENSORS, AND FELLOWS OF THE COLLEGE,—To us who have spent the greater part of our lives in the observation of patients and in teaching in the wards of hospitals the study of medicine appears to be essentially clinical. We know that reading, meditation, laboratory work, even investigations in the post-mortem room, are insufficient to make a physician without prolonged observation of patients in every condition of disease. Sydenham's firm conviction of the importance of spending as much time as possible in observation at the bedside and in meditation makes him, in his writings, appear negligent of the opinions of the men who before his day had given their lives to the study of medicine. He mentions Hippocrates about a dozen times and Galen once, Diemerbroek and Botallus and 12 other writers on the plague, and hardly any other authors except some of those whose living conversation he had enjoyed. Dr. Robert Brady, the Master of Caius from 1660 to 1700; Dr. Henry Paman, public orator at Cambridge; Dr. Charles Goodall, afterwards President of this College; and one Oxonian, Dr. William Cole,—these, and Dr. Thomas Short, are addressed as men who understood his aims and appreciated his work and show that original as he was he liked to feel that he had brothers in the world of learning in his day. Brady was a man both of active life and continuous study. He was head of his college and a Fellow of this College, and in practice, and he was for a time keeper of the records in the Tower and wrote a careful history of England and a treatise on cities and boroughs. He was Regius professor of physic at Cambridge and member for the University in two Parliaments. Paman was a pupil at Emmanuel College, Cambridge, of Sancroft, for whom in good and bad fortune he retained a friendship throughout life. He kept a medical act for his degree before Glisson at Cambridge on the subject that a very light diet is suitable in acute diseases. It is proof of his scrupulous character that he gave up a valuable post rather than take the oath of allegiance to King William III. Goodall was a Cambridge man who was Gulstonian lecturer, Harveian orator, and President here. His works on this College show his minute acquaintance with its history and his own letters his general learning. Cole wrote on intermittent fever, a treatise which is praised by Blackmore in a long Latin poem in the form of a dialogue between Jupiter and Apollo. Cole admired Glisson but resembles him in a turn for scholastic argument without having Glisson's talent for original observations. He was a copious writer, profoundly interested in medicine, but adding nothing to it. Short is the physician to whom Sydenham's famous passage on posthumous fame is addressed.

> For I do not much esteem public applause and truly what matter is it if performing carefully the duty of a good citizen and serving the public to my own prejudice I have no thanks for my labour. For if the thing be rightly weighed the providing for esteem, I being now an old man, will be in a short time the same as to provide for that which is not. For what advantage will it be to me, after I am dead, that eight alphabetical elements, reduced into that order that will compose my name, shall be pronounced by those who can no more frame an idea of me in their minds, than I can now conceive what those are to be; who will not know such as were dead in the foregoing age; and perhaps will have another language and other manners according to the inconstancy and vicissitude of all human affairs?

Among the mental associates of Sydenham must also be mentioned Locke, whose relations with him are well known, though none of the writers on the subject have, I think, compared their mutual esteem with that of Harvey and Hobbes. The study of both the political philosophers was the human race and both desired from it to ascertain the principles applicable to their own age and country. The "Leviathan" and the "Two Treatises on Civil Government" were both scientific treatises in which the attempt was made to deduce the rules of government from observations of what had happened in past times and in their own.

The medical mind which is perpetually engaged in the observation and consideration of man in every aspect of his individual life naturally interested such philosophers whether considering political problems or the special questions of metaphysics. The mental relation was the closer in each case because both Hobbes and Locke felt the charm of natural science and admired the weighing and measuring and other considerations of the observations of the senses which was the habitual frame of mind of Harvey and of Sydenham.

When Paracelsus began his lectures at Basle by flinging into a burning brazier the works of previous famous teachers of medicine he must be considered as desiring to exalt his own teaching at the expense of theirs, but this was not the feeling which prevented Sydenham from mentioning other opinions than his own. He did not undervalue his predecessors. His care for some of those who had thought much on his subject in his own time shows the contrary but he was impressed with the shortness of life, as every man must be who has tried to become deep in any subject. One of the greatest of modern men of learning at Cambridge migrated from this life as he was sitting at night by the fire in his rooms in King's College. On a table in the room was a series of 50 learned notes which he had just completed and round the border of the title he had written, "Whatsoever thy hand findeth to do, do it with thy might, for there is no work nor device, nor knowledge, nor wisdom, in the grave whither thou goest." On the manuscript of Sydenham's notes, which is in the possession of the College, he has written the same sentence from Ecclesiastes. It was a thought constantly in his mind, as is shown by several passages in his writings.

In his omission of any discussion of the opinions of others Sydenham makes one exception, "the divine old man," Hippocrates, whom he never mentions without respect. He recognised that in the Hippocratic writings medicine rested upon observation of patients and that thence must be drawn all those conclusions as to the preservation of health and the prevention or the treatment of disease which are the ultimate objects of our study and practice. "Hippocrates," says Sydenham, "better understood and more accurately described the History of Diseases than any one that came after him."[2] Yet the true spirit of observation is obvious in Galen and was not extinguished in the Middle Ages. We cannot read Avicenna or Rhazes without feeling that however different the hypotheses on which they worked from those of to-day they were nevertheless men who wished to find out the origins of diseases and who were fitted by their habits of thought to add to knowledge.

While the great physicians of those ages differed less in their mode of thought from modern men of science than is supposed by those who have not read their works, this was not the frame of mind of all who practised the medical art, or even of most of those who wrote on medicine. For all but a few medical study was to read the works of authority and to fit cases under the headings given in such treatises, while medical writing consisted in producing fresh books by extract and abstract from previous books. Quotation marks were not in use and no one who has not perused many of the writers on medicine of the Middle Ages can know how difficult it is to isolate any original remarks of the actual writer. Though in one page of a manuscript you may find statements made with the authority of Rhazes, Avicenna, Isaac, Constantin, the Philosopher (as Aristotle is generally called), Dioscorides, or Galen, this is no proof that other statements on the same page may not also be the author's version of what he has read and not his original observations. It is only a very few of the scientific writers of the Middle Ages who, like Roger Bacon, are mainly original; the books of a few more contain some little original matter, "thin in their authors," as Dryden says, and the majority are commentators and compilers only. The immediate effect of the revival of learning was to introduce the

[1] This abstract contains the substance of the lectures which by the terms of foundation must be published in full as a separate book.

[2] Of the Irregular Small-pox, p. 172.

age to the great teachers of the past and men had to go to school to them for some time before they were by them brought back to nature.

Greek literature, including, of course, the medical writers, was, as I have shown in my previous lectures, the influence which predominated in this College at its foundation. To it the greater part of the hours of study of Linacre and Clement and Wotton was devoted. The illustrious Bentley in his old age, when Mrs. Bentley lamented that he had bestowed so great a portion of his time and talents upon criticism instead of employing them in original composition, acknowledged the justice of her regret with extreme sensibility, and remained for a considerable time thoughtful and seemingly embarrassed by the nature of her remark. At last recollecting himself he said: "Child, I am sensible that I have not always turned my talents to the proper use for which I should presume they were given to me: yet I have done something for the honour of my God and the edification of my fellow creatures. But the wit and genius of those old Heathens beguiled me and as I despaired of raising up myself to their standard upon fair ground I thought the only chance I had of looking over their heads was to get upon their shoulders." I can imagine that some of the physicians of the Renaissance may at the end of their lives have had feelings like those of Bentley.

Caius was the first to write an original description of disease as observed in his own time, yet his "Liber de Ephemera Britannica" contains no series of clinical observations and he is content to give a general account of the epidemic, of its prognosis, and of the treatment adopted.

The description of the symptoms of the sweating sickness is not connected with any particular cases and is mixed up with pathological hypotheses concerning them; yet it was the first description of a disease from nature which had been written in England. The preface is dated at London, Jan. 12th, 1555, and as Caius was then living in St. Bartholomew's Hospital the book was probably written within its walls. Caius was satisfied that no account of the disease was to be found in Hippocrates or Galen and he made his description from what he had seen. The substance of what he says about the sweating sickness is—at the onset the disease attacks in some the neck or shoulder, in others the thigh or the arm; in some there is a feeling as if a breath of warmth swept down those members. At the same time a sudden and copious sweat takes place without obvious cause. First the inner parts grow warm, then burn, and thence the heat is diffused to the outer parts. There is great thirst and restless tossing about. The disease attacks the heart, liver, and stomach. A severe headache follows all these symptoms, then rambling and talkative delirium, then faintness and almost irresistible inclination to sleep. For the disease has a kind of sharper poison which moves the mind with madness and oppresses it with heavy sleep. Again, in other cases sweat is repressed at the beginning, the limbs are more lightly chilled but afterwards the same sweat bursts out, but heavy in odour, of another colour by reason of the humour, in quantity immediately after diminished, then again increased, in substance dense. In some there was nausea, in others vomiting, but this in very few and almost entirely in those filled with food. All have heavy and frequent breathing and deeply groaning voice. The urine is lighter in colour, thicker in substance, uncertain in relief, otherwise natural. The pulse excited, rapid. These were the sure signs of the sickness.[5] The defects of Caius's book are the absence of a discussion of the morbid anatomy in explanation of the phenomena and the comparatively small space given to the description of the symptoms in proportion to the many pages of hypotheses on the relation of the disease to the general scheme of fevers and on its origins. Yet it was the first step in clinical medicine in England.

Gilbert was aware of the importance of applying in medicine precise scientific methods of observation such as led to his great discovery in physics, but while it is certain that his acute and observing mind must have had but one method in all its proceedings, he has left us no records of observations in clinical medicine.

Harvey had made some notes of patients as is shown in the manuscript of his lectures on the circulation. He had watched the progress of a suppurating hydatid of the liver in a patient at St. Bartholomew's, "Apostema ingens per multos menses ex pure foetidissimo 2 or 3 gallons et aqua cum viscosis panniculis convolutis as glew stepened in water or Isonglass: regressum Hospitali,"[6] and has also observed the increase of the liver in a man with caries of the spine accompanied by long-lasting abscesses—as we should say, a case of amyloid disease, "sic magnitudo Jon Bracey Ingentem as bigg as an ox liver: liver grown: macilentissimus curvatus pro Imbecillitate moriens ex fistulis." There were probably many clinical notes among those papers of his the loss of which has so often been deplored, for almost every man who has devoted himself to morbid anatomy has also made observations in clinical medicine. Is not this plain in the writings of Morgagni, of Matthew Baillie, of Louis, of William Jenner, and of Wilks.

Besides the traces of clinical observation in Caius and in Harvey other fragmentary proofs of its use may be collected. The works, for example, of William Clowes, surgeon to St. Bartholomew's Hospital in the reign of Elizabeth, contain many passages which show how carefully he observed his patients though he evidently writes down the general result in his memory rather than anything noted day by day. He was good at telling a story rather than at recording an observation.

The first physician in England whose writings show him to have devoted himself to minute clinical observation is Sir Theodore Turquet de Mayerne who was elected a Fellow of this College on June 25th, 1616. He was the first person in England learned in all medicine and himself a part of the learned world of his time who made many elaborate clinical studies. This great man was born at Mayerne, near Geneva, on Sept. 28th, 1573, of a learned family, and you cannot go into the University library at Cambridge without being reminded of the godfather whose name he bore, the great scholar Theodore Beza, who gave to the University the ancient codex of the New Testament called after him. A note-book of Mayerne's when in the second class at school at Geneva in 1585 is among the Sloane manuscripts[7] and shows that the variety of tastes and assiduity of study which his latter writings display were already to be observed in him at the age of 12 years. The book begins with many pages of notes "de dialectica," on logic. These are followed by notes on processes of distillation with well-executed drawings of stills and other apparatus. At the end he has written out a French pastoral play. The scenes and dialogues in which Tonion bergere and Lysette, Clovis, Florus, and Daphnis take part, contain nothing which might not have been written by an ingenious boy, but Mayerne does not state that he composed it. He clearly was interested in it. It is probable that the drawings and the play may have been written rather later than the logic. After his school education he studied at the University of Heidelberg for four years and then at Montpelier where he graduated M.B. in 1596 and M.D. in 1597. He settled in Paris and early in his career had some medical controversies with the physicians there out of which he emerged with credit to himself. He had been attacked for using chemical remedies to which the Galenists of the time objected and in a well-expressed reply he showed that his prescriptions were both useful and in accordance with the principles and practice of Hippocrates and Galen. Mayerne went on with his work in spite of much opposition from his seniors. He felt some scorn of his opponents, since in one of his note-books begun at Paris in October, 1602,[8] he has written a list of 14 patients who had been left to die by the physicians of Paris or by others, but were restored to health by him and by Riverius, the King's physician. 16 long notes of this period of his practice have been printed.[9] Before he left Paris opposition seems to have ceased and he had become physician in ordinary to the King of France. In 1606 he was taken to England by a patient whom he had cured and received the degree of M.D. at Oxford. He did not, however, settle in London till 1611, when he was desired to come by letters patent under the Great Seal and was appointed first physician to James I. His profound knowledge of his profession and great ability and general learning at once secured for him the friendship of this College. The first case after he came to England of which he has preserved a note is that of Sir Robert Cecil, the Earl of Salisbury, who, like his descendant in our time, was first Minister of the Crown. Mayerne saw Cecil at Salisbury on August 1st, 1611, and

[5] Johannis Caii: Liber de Ephemera Britannica. Ed. S. Jebb, M.D., London, 1721.

[6] Prelectiones Anatomiae Universalis (1886), Autotype f. 39b.

[7] Sloane, 2013.

[8] Sloane MS., 2069, fol. 23a.

[9] Opera (ed. Browne), London, 1701.

evidently thought ill of his case. He describes a large hard abdominal tumour occupying nearly the whole hypogastrium on the right side and associated with prolonged diarrhœa—probably a new growth of the cæcum. The symptoms and their meaning are discussed in six folio pages of print of two columns each and the treatment in 12½ columns, and it is evident that while Mayerne expresses the wish that careful management may do something for the patient he was not hopeful of recovery. The earl died on May 24th, 1612.

Mayerne was consulted during the fatal illness of Henry Prince of Wales in 1612 and drew up an excellent account of the symptoms, treatment, and post-mortem appearances, from which, as I have elsewhere shown, it is easy to establish that the Prince died from enteric fever of which there was an epidemic in London at the time of year at which at the present day enteric fever is almost invariably present in this City. So excellent are the notes of Mayerne that it is fair to say that nothing but the pathology of his time prevented him from being the first recogniser of enteric fever. Many, he says, had a similar fever in the summer of 1612. It usually began like a tertian but soon became a continued fever. In those who recovered it lasted a long time. Delirium, stupor, and convulsions often occurred. Hæmorrhage sometimes ended the case. There were spots like flea bites in many cases. The disease was not contagious, nor did one infect another, but sometimes many were sick at the same time in one house. The memoir which he drew up in December, 1623, on the health of James I. is a good example of Mayerne's method. It exists in his own characteristic handwriting in the British Museum * and is in Latin. I may give sufficient of its substance to show its nature without fatiguing you by a literal translation of the whole.

James the First King of Great Britain was born at Edinburgh in the year 1566 on June 19th, at half-past eleven in the morning, and is now aged over 57 years. He had a drunken wet-nurse and was suckled for about a year. He has a very steadfast brain which was never disturbed by the sea, by drinking wine, or by driving in a coach.

The badness of the roads and the rude construction of vehicles must have at that time often caused sickness from oscillation in travellers.

He is easily affected by cold and suffers in cold and damp weather. His chest is broad and well formed and the vital parts contained therein have strong and lively warmth and never are afflicted unless as a result of morbid conditions elsewhere. In this way it happens that his lungs are often attacked by fluxion, the material of which is swiftly thoroughly matured by the power of the very warm heart. The liver naturally good, large, of much blood, warm, liable to obstructions, and inclined to generate much bile. The spleen now easily heaps up melancholic juice, the presence of which is indicated by various symptoms. There is no swelling in either of these viscera and no hardness. Each hypochondrium is soft and never distended except with wind. The stomach is always ready for the burden of a large quantity of food and is prompt to get rid of any hurtful excess chiefly by the bowel. He has naturally a good appetite and duly digests a sufficient quantity. He very often thirsts and often swells out with wind, of which imperfect digestion or fermentation is the origin. Bowels uncertain; the discharge soft and fluid. The mesentery is apt to be obstructed in the wanderings of its vessels. Kidneys warm, disposed to generate sand and gravel. His legs seem not strong enough to sustain the weight of the body. His habit loose and of pervious texture, and he readily heats with dry heat. Skin thin and delicate so that it itches easily. Fauces narrow, causing difficulty in swallowing, which defect is hereditary from his mother and his grandfather, James V. of Scotland. Animal and vital faculties blameless. All functions naturally good, but perverted on occasion and most from disturbance of mind. As to the non-naturals:

Air.—His Majesty bears all changes of air fairly well; in damp weather with a south wind he is attacked by catarrh.

Food.—As regards food he does not much amiss except that he eats no bread. He generally takes roast meats. Owing to want of teeth he does not chew his food but bolts it. Fruit he eats at all hours of day and night.

Drink.—In drink he errs as to quality, quantity, frequency, time, and order. He promiscuously drinks beer, ale, Spanish wine, sweet French wine, white wine (his normal drink) and Muscatelle wine (whence he has diarrhœa), and sometimes Alicant wine. Nevertheless, he does not mind whether wine be strong or no so it be sweet. He has the strongest antipathy to water and all watery drinks.

Exercise and rest.—The King used to be given up to most violent exercise in hunting. Now he is quieter and lies or sits more but that is due to the weakness of his knee-joints.

Sleep and waking.—He naturally sleeps ill and restlessly, and often at night he is roused and calls the valets and sleep does not return unless as often it takes him by surprise while the reader is reading aloud to him.

Affections of the mind.—His mind is easily moved suddenly. He is very wrothful but the fit soon passes off. Sometimes he is melancholy from the spleen in the left hypochondrium exciting disorders.

Excreta.—He often blows his nose, sneezes very often. Does not spit much unless from catarrh. Stomach easily made sick if he retains undigested food or bile. Vomits with great effort so that after being sick his face appears for a day or two spotted with red spots. Much wind. Vapours from his stomach precede illness. The alvine discharge is uncertain and depends on the nature of his food, which often produces morbid changes. A tendency to looseness gets rid of a burden produced by what he has eaten.

Urine generally normal and sufficient. Often sandy sediment after a time. Sometimes friable calculi or rather agglutinated grains of sand are sifted out. He sweats easily owing to the thinness of the skin, especially at night, after exercise after copious meals. He is impatient of sweat as of all things. From the year 1619 after a severe illness in which leeches were applied has had a copious hæmorrhoidal flow almost daily. If this does not occur the King becomes very irascible, melancholy, jaundiced, glows with heat, and his appetite falls off. When the flow returns all things are changed for the better.

Former illnesses and present aptitude to various morbid dispositions.—The king to the sixth year of his age was not able to walk but was carried about, so weak was he from the bad milk of his drunken nurse. Between the second and fifth year he had small-pox and measles. In his fifth year for 24 hours he had suppression of urine, nevertheless no sand or slime was ejected.

Colic.—He often has colic; this was worse before he was 24; it afterwards became milder. Fasting, sadness, cold at night produced it. It is relieved by the converse. Cholera often, and when young almost every year he was seized with cholera morbus with shivering preceding sickness and bilious diarrhœa.

Diarrhœa.—He has been liable to diarrhœa all his life; most in spring and autumn, most of all from about the end of August or beginning of September, after eating fruit, sometimes with fever sometimes without. Before this diarrhœa he almost always has depression of mind, sighing, dread of all things, and other melancholic symptoms. In 1610, at the end of Parliament,† after great sadness diarrhœa for eight days, with watery bilious, very fetid, and at last black excreta. Cardialgia, palpitation, sighing, sadness, &c. Vomiting recurring twice or thrice a day. The King regained his health after proper remedies.

In 1612 4 December after the death of his son a paroxysm of melancholy—an attack of illness ending in diarrhœa lasting a few days. 1619, after the Queen's death, pain in joints and nephritis with thick sand. At Royston continued fever, bilious diarrhœa, watery and profuse throughout the illness. Hiccough for some days. Aphthæ all over mouth and fauces and even the œsophagus. Fermentation of bitter humours boiling in his stomach which effervescing by froth out of his mouth led to ulceration of his lips and chin. Fainting, sighing, dread, incredible sadness, intermittent pulse. Nevertheless, it is to be noted as to this intermission of pulse in the King that it was frequent. Nephritis, from which without any remedy having been administered he excreted a friable calculus as was his wont. The force of this the most dangerous illness which the King ever had lasted for eight days. Remedies were used with success. After that illness for two years the King was fairly well and free from other, even his usual affections; afterwards as was his wont diarrhœa recurred but less severe.

This year 1623 at the end of autumn it lasted for two or three days, and was excessive. After this arthritis, and after this, after an interval of three weeks he was able to walk without help, while before for months he had had to sit in a chair and be carried or be helped along by the support of others. The happy effect of the spontaneous evacuation is to be noted.

Our King is easily attacked by catarrh descending from the brain and producing coryza. Most often it attacks the lungs and a most violent cough follows, but within two or three days maturation occurs and the cough ceases and the humour thick and black is rejected from the bronchi.

Fever.—He rarely has fever and if any it is short and ephemeral.

Jaundice.—Easily comes on if he is in any way out of sorts whether in mind or body. Often his eyes grow yellow but it soon passes off.

Hæmorrhoids.—Some loss of blood nearly every day, with sometimes prolapse and tenesmus.

Nephritis.—Many years ago after hunting and long riding he often had turbid urine and red like Alicant wine (which are His Majesty's words) but without pain.

12 July, 1615, bloody urine with red sand soon feculent and with thick sediment. Ardor urinæ, pain in the left kidney; frequent vomiting and other nephritic symptoms.

The same but worse Aug. 17. In 1615, October, the same symptoms. His accustomed flux relieved all these paroxysms. Afterwards the evil often renewed and in some of the accessions calculi or rather concoctions were ejected and soft sand adhering together with imperfect cohesion and then the attack came to an end.

Arthritis.—Pains many years since invaded first the right foot, which had an odd twist when walking and from a wrong habit of steps had a less right position than the other and grew weaker as he grew older. Afterwards occurred various bruises from knocking against timber, from frequent falls from horseback, from the rubbing of greaves and stirrups and other external causes which the King ingeniously discovered and exactly noted that he might baffle the accusation of internal disorder on the part of his physicians.

Pain of his right foot used to afflict him most often; not the toes not the joint of the foot with tibia, but underneath the external malleolus. All the same I have observed that the whole foot has more often swelled and so much weakness from pain remained that for several weeks he had to give up usual exercise and was compelled to stay in bed or in a chair. At last in the year 1616 this weakness continued for more than four months with œdematous swelling of the whole shin and of both feet. In following years it happened that the pain went on to joints of other parts, the great toe of the left foot and the malleoli to both knees and shoulders and hands, sometimes not always with redness, more often with swelling. The pain is acute for the first two or three days. By night it rages now worse now milder; weakness succeeds which is neither subdued nor disappears till after a long course of days. In winter time the arthritis is much worse nor are the joints free till the return of the sun and summer warmth restores health to his Majesty.

Thrice in his life he was seized with most severe pains of the thigh, very recently on the 28 October, 1623, as if by a spasm of the muscles and tendons bending the left leg by a vaporous influence most pertinaciously twitching those parts in the hours of the night. The leanness and so to speak atrophy of his legs were to be noted

* Sloane, 1679.

† Parliament was dissolved Feb. 11th, 1611, after much sharp discussion about the King's favourites and without making the pecuniary arrangements he desired. James was highly irritated.

as due to the intermission of exercise not calling the spirits and nourishment to the lower parts which from childhood were slender and weak.

The King when coming into England from Scotland falling from his horse broke his right collar-bone. Another time from a fall he suffered from a bruise of the left scapula. He was completely cured. From that time nevertheless there was descent of humours into his right arm whence arose swollen glands like the phlegmatic excrescences of scrofula which first swelled with redness and pain, then subsided and at length suppurating formed ulcers that were healed after a long time.

It is to be noted that from the same humours or perhaps from arthritic juice descending, a tumour appeared two years later on his right olecranon, distended with wind and serum, which happily ceased after proper remedies without breaking the skin. Once having bruised and almost broken his ribs on a fall from his horse for three days he had slight fever. He recovered without blood letting.

Another time the fibula of the other leg was squeezed by the weight of a horse with most dangerous bruising and blackening of the whole leg. He was cured without fever. He is of extreme sensitiveness, most impatient of pains and while they torture him with most violent movements his mind is tossed and bile flows around his præcordia whence the evil is not relieved but made worse.

He demands relief and freedom from pain little considering about the causes of his illness.

As to remedies.—The King laughs at medicine, and holds it so cheap that he declares physicians to be too little useful and hardly necessary. He asserts the art of medicine to be supported by mere conjectures, useless because uncertain.

Mayerne mentions other royal opinions and the King's fancies about various drugs. He would never allow himself to be bled. He then goes on to say what should be done and what is chiefly to be remembered in treatment of the King in every circumstance likely to arise. This excellent account shows how Mayerne behaved as a clinical observer—noting everything; considering no point of the patient's history unworthy consideration; weighing the whole in relation to treatment and to prognosis. It was his invariable method. He began by a minute series of observations of the symptoms; then mentioned in succession the remedies which had been tried; then discussed and determined the diagnosis and the several parts of the prognosis; and concluded by an elaborate statement of the treatment to be adopted. That he felt the spleen is shown in his notes on Lord Salisbury, and that he examined by palpation the liver is shown by the case of M. la Natier Greffier in which he says,[10] "Hepatis qualitas non potuit explorari ob musculorum et cutis diductionem."

Mayerne's notes on Queen Henrietta Maria contained in the same manuscript book show equal care. They were written out in July, 1641, when the Queen was about to cross the sea "to cure her mind no less than her body," says the note. Some swelling of liver and spleen, frequent swelling of the gums and painful teeth, several renal calculi, frequent cough, sleepless nights only soothed by syrup of poppy (never by laudanum), herpes of the upper lip, occasional inflammation of the right eye, and of the eyelids, recurring headaches, curvature of the spine (scoliosis), the arm and hand of the right side thinner than those of the left, extreme general wasting and as regards affections of the mind (animi pathemata) anger violent but brief, long sadness, frequent tears.

The details of all these are carefully recorded and besides showing the excellence of Mayerne's clinical observation present to us a picture of the Queen of Charles I. which placed beside the lady so thin and pale with some grace but no cheerfulness in the pictures of Vandyke, enables us to understand how her troubles in the world must have affected her and leads us to judge leniently any defects of manner or disposition in her and to attribute them not to a fiendish nature, as did her political opponents when they applied to her the words in which Æneas denounces Helen as he describes how he found her hiding on the night of the taking of Troy—

"Troiae et patriae communis Erinys,"

but in great part at least to a physical condition which must have greatly detracted from her enjoyment of life.

In Mayerne's note-book there is a blank page with a heading which shows that it was intended for notes on the health of Charles I. A friendly letter, dated Feb. 3rd, 1636, to Harvey then at Newmarket, is printed in Mayerne's works [11] on the illness and best method of treatment of the Elector Palatine. The confidence which Charles I. and his Queen felt in Mayerne is shown by two letters which he has copied into his note-book. The heading is

πάντα σὺν θεῷ, ἀμήν

—the history of a journey to Exeter undertaken to restore the health of the Queen, then seriously ill. He left London on May 21st, 1644, with another physician, Sir Matthew Lister, and taken in the Queen's coach they reached Her Majesty at Exeter on May 28th. These royal letters are so little known that I may add their words. The Queen's has, I think, not been printed before.

Exeter ce 5 May.

Monsieur de Mayerne, mon indisposition ne me permet pas d'escrire beaucoup, pour vous prier de venir si vostre santé vous le permet, mais mon mal vous y conule plus comme j'espere que ne feroit beaucoup de lignes. C'est pourquoy je ne diray que cela, ayant tousjours dans ma memoire les soings que vous aués eu de moy dans mes besoings, qui faict que je crois que si vous pouués, vous viendrés et que je suis et seray tousjours,

Vostre bien bonne mestresse
et amie,
HENRIETTE MARIE R.

The letter of the King was sent from Oxford by William Muray to London.

Mayerne—Pour L'amour de moy allé trouuer ma Femme. C.R.

Many other of Mayerne's clinical descriptions of patients are as good as those of these royal persons. That on the first Earl of Abercorn, made on Sept. 28th, 1616, when the earl was aged 41 years, gives an admirable account of his history and of the physical and mental phases of his life.

Mayerne left his library to this College from loose papers in which some fragments of his works were published, but it was not till 1700 that a volume in folio of his notes was printed by Dr. Joseph Browne. He selected such parts as he thought Mayerne would have wished to print, or Bonetus of Geneva, to whom Mayerne had sent the first fasciculus to get it printed. The printing was delayed and Bonetus sent the book back to the author and urged that he should publish all he had written and not only selections. A great part of the College agreed with Bonetus when, long after Mayerne's death, the question of printing arose. The Censors referred the matter to Dr. Charleton, who took a different view and wanted to recast the whole. Browne wisely decided to issue the papers unaltered. His book contained full notes of more than 40 cases observed by Mayerne, with letters about seven more, the report and papers about the case of Henry Prince of Wales, a letter to the King's physicians about the health of James I. and Charles I., then Prince of Wales, the letter to Harvey at Newmarket on the health of the Elector Palatine, and a long series of notes on the illness of Isaac Casaubon, in which are incorporated the notes of Raphael Thorius, the author of the poem on tobacco, who attended him. Notes on pharmacology and a long series of prescriptions for King James, King Charles, and Queen Henrietta Maria are also printed and some notes on her health.

Mayerne seems not to have been unwilling to treat any symptom, however slight, and this arose not from any mere complaisance to the King and Queen but from the fact that to his keen observation nothing seemed trivial. If he sometimes humoured his patients he never allowed their high station to obscure his thorough investigation of their symptoms or view of their characters in relation to their physical frames. It was surely harmless when King James swore he hated to be anthropophagous—to give him powdered ox bones instead of cranium humanum, a remedy then highly estimated.[12]

A great part of Mayerne's papers became the property of Sir Hans Sloane and are now in the Sloane Collection in the British Museum. They show not only Mayerne's industry as a clinical observer, but his extensive learning and constantly studious mind. 23 volumes of his notes of varied kinds have been preserved and these, together with those printed by Dr. Joseph Browne, are the material for our estimate of him as an observer. His general plan was to divide the notes into two parts; the first called *Theoria* gives an account of the history and symptoms and the conclusions drawn from them; the second headed *Curatio* deals with the treatment in great detail and to increase the clearness of this he sometimes adds a *recapitulatio ordinis agendorum*.

Sir T. Mayerne's portrait hangs on our staircase.[13] In the dining-room is that of Francis Glisson, President in 1667. He is the first English writer of a complete account—that is, an account, both anatomical and clinical, of a particular

[10] Opera, p. 216.

[11] Opera, p. 361.

[12] In rege qui ἀνθρωποφαγία odit, Cranium humanum in ossium Bubulorum Rasuram poterit permutari.

[13] In the British Museum there is a magnificent drawing of him by Rubens, probably done between 1630 and 1640. The head is in oils and finished with extraordinary vigour and perfection. The rest of the portrait is in crayon.

disease. His "Tractatus de Rachitide" appeared in 1650. It deserves high praise as an example of clinical observation as well as of pathological anatomy. Glisson's method consisted in placing side by side all the facts relating to the disease he was studying. He does not allude by name or number to particular patients, yet shows by the precision of his statements that each rests upon many carefully noted observations. He collects the symptoms of rickets under three heads: *diagnostica*, which demonstrate its presence; *discritica*, which distinguished the varieties; and *prognostica*, which presage the issue of the disease. The thorough discussions of terms and the minute and precise arrangement which he follows give a scholastic appearance to his pages which is apt to make anyone who merely glances at his book think that Glisson is less an observer of nature than he really is. When he discusses the diagnostic signs he does so under five heads: (1) symptoms which have to do with the animal functions; (2) those which have to do with irregular nutrition; (3) those which have to do with respiration; (4) those which belong to the vital influx, as we should say to the circulation; and (5) certain indefinite symptoms not belonging to the above classes. Under the first head he places flabbiness of the muscles, weakness, and sluggishness, and describes each with admirable clearness and entirely from clinical notes. "If," he says in the section on debility, "children are affected within the first year or thereabouts they stand on their feet later than usual owing to that debility and often speak before they walk which is generally thought by the English to be of evil omen. If children are attacked by this disease after they have learned to walk, they stand on their feet more feebly by degrees and when walking often hesitate, stagger from a slight cause, or even fall, nor are they able to stand long without sitting down, or to quicken their movements. At last as the disease increases they are deprived of the use of their feet; indeed, they can scarcely sit upright, and the weak neck sustains the weight of the head imperfectly or not at all." Under the heading "Symptoms due to malnutrition" he describes the large head, the feeble muscles, the enlarged wrists, the bent bones, the retarded dentition, and the pigeon breast.

Professor Virchow in his Croonian lecture of 1893 praised Glisson as the discoverer of muscular irritability. He is perpetually commemorated as an anatomist. Whoever studies his "Tractatus de Rachitide" will be convinced that he also deserves recollection as one of the first followers of thorough clinical study in England, and Sir Michael Foster[14] in his interesting lectures on the History of Physiology has shown that in his "De Ventriculo" Glisson "was the first to give the exact proof that when a muscle contracts it does not increase in bulk."

The method of Christopher Benet in his "Tabidorum Theatrum sive Phthisios Atrophiæ et Hecticæ Xenodochium," published in 1656, is similar to that of Glisson, and he seems to have lost his life by infection during his experiments in relation to the sputum of phthisis, which he carefully collected and observed.

The excellent clinical method of Mayerne in which all the facts about each patient were carefully collected and that of Glisson in which all the facts relating to a particular morbid condition were placed side by side and dialectically argued were not adopted by all physicians.

A prominent example of another school is Walter Charleton, physician to Charles I., and President of this College from 1689 to 1691. His "Spiritus Gorgonicus," published in 1650, in which he treats of the causes and symptoms and cure of calculi wherever formed, is altogether different from the writings of Glisson or of Benet. He begins by discussing petrifaction in the outside world and thence goes on to the efficient causes of petrifaction in the human body, and in the chapter on diagnosis the nearest approach to the report of a case is the mention of a Mr. Pinckay, commissary of the Royal Army, who had shown him 50 renal calculi which he had passed and afterwards carried about in an ivory box. Charleton's "Exercitationes Pathologicæ," which discusses the nature, generation, and causes of almost all diseases and was written in 1661, is in part occupied by the discussion of questions of medical expression, such as when a disease may be spoken of as malignant, or incurable, or hereditary, and how the common qualities of the tissues of the body may be defined "Crassities, Tenuitas, Densitas, Raritas, Consistentia, Fluiditas, Tenacitas, Friabilitas, Tensitas, Laxitas, Rigiditas, Flacciditas, Durities, Mollities, Lævor, Asperitas." Except a case of very hard tumour of the pancreas in a woman which was accompanied by anæmia, or, as he calls it, chlorosis, he scarcely mentions any case which he had himself seen, nor is his account of even this sufficiently definite to make one sure whether the tumour was a dense new growth or a pancreatic calculus of uncommon size. How long the patient was ill is not stated, nor are the incidents of the illness. Such was the method of medicine of Dr. Walter Charleton. Dryden praised Charleton profusely yet with some discrimination:—

> "Nor are you, learned friend, the least renowned,
> Whose fame, not circumscribed with English ground,
> Flies like the nimble journies of the light,
> And is, like that, unspent too in its flight.
> Whatever truths have been by art or chance
> Redeemed from error or from ignorance,
> Thin in their authors like rich veins of ore,
> Your works unite, and still discover more.
> Such is the healing virtue of your pen
> To perfect cures on books as well as men."

Charleton's copious writings are sufficient to show that clinical study was not universally cultivated among the physicians who were contemporaries of Mayerne and Glisson. Only one man of that time outshines Glisson in the exposition of clinical medicine, and that man is, of course, Sydenham.

I need not dwell on the well-known events of the life of this great man, who, born in 1624, took his first medical degree at Oxford in 1648 and his doctor's degree at Cambridge in 1676, and after practising in London for a little more than a quarter of a century died on Dec. 29th, 1689.

As Mayerne may be said to have first definitely established in England the clinical study of medicine and the method of recording observations, and Glisson to have set the example of the study together of the symptoms and the anatomical appearances of disease, so Sydenham may be regarded as the first who attempted to arrive at general laws about the prevalence and the course and the treatment of disease from clinical observation.

How admirable is Sydenham's account of measles, and, when it is compared with the books of his time and before, how original, how clearly he describes the onset and the method of appearance of the rash, and how well contrasts the circumstances which attend it with those of small-pox. "The symptoms of the Measles do not abate by the eruption as in the small-pox, yet I never observed the vomiting afterwards, but the cough and fever increase with the difficulty of breathing, weakness of the eyes and the defluxion on them, with continual drowsiness and want of appetite as before." His obvious originality is one reason for the great repute of his writings, and this originality is due not merely to his having thought differently but also to his having seen more than his predecessors. Though Sydenham's is a general account it is as distinctly based upon many clinical observations as if the notes of the cases he had seen were appended.[15] Of the score of cases which he particularises most are mentioned in illustration of points of treatment, but those of Thomas Chute, nephew of Lady Dacres, a young man with small-pox, and of Malthus[16] the apothecary, who had a chronic arthritis, are excellent illustrations of his daily observations.

A great mind constantly occupied in arguing within itself on observations must sometimes furnish incomplete conclusions and imperfect hypotheses, and though Sydenham says when discussing the possible relation between certain visceral symptoms and the size of the pustules in small-pox, "I do not determine; for I only write a History and do not pretend to solve problems," he elsewhere tries to argue out a general pathology of fevers.[17] "A fever," he believes, "is Nature's instrument to perform the separation of some matter from the blood." This is the process "also in the plague."

Charleton, had he described small-pox, would probably have done so in much the same way as Bernard or Gaddesden; some of the authors he mentioned might have been different, but he would proceed by way of scholastic discussion and quotation and tell little of what he had

[14] Lecture X., The Old Doctrines of the Nervous System.

[15] Of the Epidemic Diseases from the Year 1675 to the Year 1680.

[16] I suppose this Malthus was the ancestor of the political economist since Sydenham was used as a Christian name in more than one generation of his family.

[17] Of the Continual Fevers in the Years 1667, &c.

himself seen. How entirely different is the method of Sydenham.[18]

> The distinct begin with shivering and coldness, which is presently followed by excessive heat, and a violent pain in the head and back, vomiting, a great propensity to sweat (I mean in grown persons, for I never yet observed any such disposition in children, either before or after the rash came out), a pain at the cavity of the breast beneath the region of the heart, if it be pressed with the hand, dulness and sleepiness and sometimes convulsive fits; and if these happen to those that have all their teeth, I reckon the Small-pox are at hand, which most commonly coming out a few hours after sufficiently answer the prognostication. For instance, if the child has a convulsive fit in the evening, as it usually happens, the small-pox appear next morning.

His description of the severe neuralgia which sometimes is the last symptom of a malarial fever, and his determination of the fact that it really belongs to the disease and must be treated in the same way, is a remarkable example of his close observation.[19]

> But here it is to be noted that I have observed a certain sympt the sometimes like a nephritic pain, as to the intolerable pain of the loom, which being wont to follow ague, arises from a translation ofius, febrile matter upon the muscular parts of the body, but this symptom requires no other method of cure, than the ague whereon it depends, for it is heightened by frequent bleeding, or any other evacuation, and the patient's life is endangered thereby. I thought good to mention this much of this symptom, that it might not impose on anyone.

The neuralgia is sometimes so severe and so different from what has gone before and so remote from the beginning of the disease that it seems more like a separate morbid condition; but Sydenham perceived its actual relation to the disease. His description of gout and of hysterical diseases and of chorea are further examples, too well known for me to quote, of the minuteness and precision of Sydenham's clinical observations. He scarcely considers morbid anatomy but endeavours to determine the species and ascertain the course and the treatment of diseases by clinical observation only.

This is the general method of the Hippocratic writings and thus while Sydenham is often regarded as the originator of modern medicine his works might also be considered the culmination of the effects of the Renaissance.

The writings of Thomas Willis contain many cases but it is clear that he only took a general view and did not make frequent precise observations. After a short account he generally proceeds to discuss the pathology, and this is so even in his accounts of saccharine diabetes of which he is generally regarded as the first describer. Willis, like Glisson, discusses the morbid anatomy of his cases. He often uses them to illustrate pathological doctrines rather than as studies in the natural history of disease. His interesting descriptions of the illness successively of five children in a family, cases, I think, of a scarlet fever with subsequent uræmia, are perhaps the best clinical reports to be found in his writings. His account of the case of Lord Shaftesbury, who had a hydatid cyst of the liver which was opened, when compared with the precise description of the same case by Locke,[20] show that Willis often wrote from memory and not from notes made day by day. His works contain more hypotheses than minute observations.

The cases mentioned by Martin Lister and those of some other writers of this period are too brief to deserve record as examples of clinical notes.

A clinical observer whose works show the practice of generalisation from clinical observation as well as the careful records of the events of disease as observed at the bedside is Richard Morton who became a Fellow of this College in 1678 and died in 1698. His "Phthisiologia," a treatise on wasting diseases, contains numerous cases showing careful clinical note-taking and judicious deduction from his observations and so does his "Pyretologia," a general treatise on febrile diseases. He belongs to the school of Sydenham but he makes a more general use of morbid anatomy and describes more cases.

The physicians whom I have mentioned, Caius and Harvey, Mayerne and Glisson, Sydenham and Willis and Morton, were of course not the only clinical observers of their times. We may be certain, for example, that Lower who so acutely reasoned on the causes of dropsy followed the same method. Mayerne, Glisson, and Sydenham are the three clinical observers of the seventeenth century whose work deserves the first place; Mayerne and Sydenham gave themselves up almost entirely to bedside observation. Glisson, while equally assiduous at the bedside, was also a morbid anatomist. Glisson's mind most naturally turned towards the discovery of pathological laws and to questions of etiology. Mayerne and Sydenham were most occupied with the solution of problems of treatment and of prognosis. All three were close observers of nature. Glisson was a discoverer in anatomy, for he described the capsule of the liver, in physiology he first perceived the irritability of tissues, and in clinical medicine he first described completely a disease not known in the world of science before him. Sydenham had on the whole the greatest influence on times after him. Mayerne was a less man than Glisson and Sydenham in times to come but in his own day was a great and noble figure of vast attainments, of lifelong mental activity, and in his own time an influence to make all men bedside observers. All three observed carefully the general aspect of the patient and all the external features of his body. The breathing, the character of the pulse, the state of the tongue, the locality of pain, the indications of fever, the excreta, and the appearances of extracted blood were considered. Tumours were felt and the degree of dropsy estimated. Any impairment of the senses or of muscular power was noted. The liver and the spleen were examined by palpation. The history was carefully considered and facts bearing on heredity were recorded.

This was the extent to which observation at the bedside was practised by these physicians. Mayerne seems most in personal relation to the patient, thoroughly investigating his mind and body; Glisson is most considerate of the interpretation of well-observed symptoms given by the morbid anatomy. Sydenham had always before him the endeavour to establish general laws in relation to disease and hoped to do so by a precision of description such as that of the botanists in the description of plants. It is to Mayerne, Glisson, and Sydenham that the establishment of the study of clinical medicine in England is due.

[18] Of the Regular Small-pox.
[19] Of the Epidemic Diseases from the Year 1675 to the Year 1680.
[20] Shaftesbury Papers: Original note.

An Address
ON
LONGEVITY AND THE MEANS OF ATTAINING IT.

Delivered at the Opening Meeting of the Manchester Medical Society on Oct. 3rd, 1906,

BY SIR LAUDER BRUNTON, M.D., D.Sc., LL.D. EDIN., LL.D. (HON.) ABERD., F.R.C.P. LOND., V.-P. R.S.,
CONSULTING PHYSICIAN TO ST. BARTHOLOMEW'S HOSPITAL.

MR. PRESIDENT AND GENTLEMEN,—Long life has at all times been regarded as one of the greatest blessings that a man can possess and this feeling finds expression in the common acclamation "Let the King live" or "Long live the King." But long life is only to be desired when the faculties which render it a pleasure to its possessor or pleasing to his relatives and friends are retained in sufficient measure. Although the Prayer-Book contains a petition against sudden death, yet this is only to be regarded as a petition against unprepared-for death, for sudden death, though sad for those who are left behind, is really a great boon to the one who goes. But it does seem a very sad thing to see a man, whatever his age may be, cut down when his powers as yet show no signs of decay and when increasing age has brought with it increasing wisdom and power to direct and to help others. Less than six months ago I saw a gentleman who, despite his 76 years of age, was strong, erect, and to outward appearance healthy in body as well as vigorous in mind. He was a man of great influence in the commercial world, universally respected, his opinion deferred to, and at the time I saw him full of schemes as to what he was going to do. I found, however, that the tension in his vessels was so exceedingly high that I not only prescribed vascular dilators to lower the pressure within the vessels, but wrote to warn his medical man of the extremely precarious condition of his patient. In spite of the treatment, however, the fatal issue which I dreaded occurred in less than a week. This man's life had exceeded the span of three score years and ten, yet he had all the mental energy of a man in the prime of life combined with the

long experience which enabled him to direct it to the best advantage. Although three score years and ten are generally regarded as the term of life, yet we see men who have exceeded it—such as the late Mr. Gladstone, the present Prime Minister, and the ex-Lord Chancellor—all doing work which would be severe for a man in the prime of life, and doing it well. The late Mr. Sidney Cooper painted up to the time of his death and almost rivalled in this respect Giovanni Bellini, who is said to have painted his best picture after the age of 90, and Titian, who painted up to the age of 99, when he died from plague. An even more striking example is that of the distinguished French chemist Monsieur Chevreuil, who, I believe, lectured at the College of France up to the age of 100, and a year and a half ago I had the pleasure of being present as a guest of Dr. W. Milligan at the dinner given to Señor Garcia on his hundredth birthday, a day on which the old gentleman went through an amount of fatigue that might have killed many a younger man.

The object of my paper to-night is chiefly to consider the nature of the risks which old people run and how they may be best foreseen and averted so that great activity in advanced years such as appear in the examples I have just given may become the rule instead of the exception. These risks may apparently be divided into (*a*) those which arise from external influences; and (*b*) those which originate in the body itself. Of course, the action of both classes of causes may be, and often is, combined. Thus infection from without, such as pneumonia or erysipelas, might often be successfully withstood even in advancing years were it not for the presence of degeneration in the kidneys and atheromatous changes in the vessels, or enfeebled heart might continue for years were it not for a sudden fall or shock which cuts short the thread of life.

Through the kindness of the Registrar-General, Sir William Dunbar, and the able assistance of Mr. Finch, I have obtained some interesting tables showing the numbers living at various ages for 70 years back. It is by no means easy to read statistics aright, but, so far as I can see, these tables show a continuous increase in the expectation of life at birth, roughly speaking, from a little under 40 years in 1854 to a little under 48 years in 1900. In the decades from 60 to 90 years there is a slight diminution and this is also the case at the age of 100 for males. There is a little increase at this age for females. There is an increase in the number of survivors to the age of 80 both in men and women, but fewer men live to the age of 90, though more women do so than 60 years ago. The number of men living to 100 years per 100,000 of the population from 1891 to 1900 is only seven and of women 24, as compared with 15 men and 30 women in 1838 to 1854. These figures are, however, vitiated by the fact that between the ages of 55 and 65 there has always been a tendency to over-statement—a tendency that grows as age advances, so that very little reliance can be put on the data of extreme ages. During the last 50 years this tendency to over-statement has decreased slowly and irregularly in the age group 65 to 75, but rapidly and continuously at the higher age groups. The decrease has been so considerable that the numbers returned at the ages over 85 in 1901 were probably more nearly correct than those at ages over 75 in 1861 and 1871.

One of the first points that naturally attract inquiry in regard to influences from without is that of septic infection and the benefit which is likely to have been produced by the introduction of antiseptic methods. The statistics of surgical operations show very clearly the good effect of antisepsis, but a still wider basis is afforded by the statistics of death-rates from childbirth, including puerperal and septic diseases. These sank from 335 per 1,000,000 in 1861–70 to 295 in 1891–1900, and in all probability as antiseptic methods become more widely diffused over the whole country the proportion of deaths will sink much lower still. The more rigid application of antiseptic methods to diseases of the bladder and the introduction of prostatectomy are likely to increase longevity in males to a considerable extent, because even at present many men die much sooner than they otherwise would from septic infection of the bladder by non-sterile catheters. Despite antiseptics erysipelas is still a very common cause of death among the aged, and this disease also ought to be diminished greatly by proper antiseptic measures. Respiratory diseases, bronchitis and pneumonia, carry off a great number of aged people. Both of these are usually ascribed to the effect of cold, but it should be borne in mind that while both are consequent upon exposure to cold, yet in both pathological organisms play a great part. Although Pasteur's experiment with fowls is so well known that it may seem useless to repeat it, yet it is of such fundamental importance that I venture to remind you that the French savant discovered that fowls, the natural temperature of whose body is nearly 104° F., are immune from anthrax, but if they are made to stand with their feet in cold water until their temperature is sufficiently lowered they then become susceptible to the disease. In the same way many apparently healthy people carry about in their pharynx the germs of pneumonia but do not take the disease until their vitality is lowered by exposure to chill. Two factors are required to give rise to the disease—the lowered vitality of the patient and the infection from without, and neither will produce the disease without the presence of the other.

To discuss fully the subject of infection from without would involve a consideration of infection generally. Time will not permit of this, but in regard to this subject it may be well to consider that many so-called common colds are very infectious and are readily transmitted from one person to another. One of the most violent attacks of bronchitis which I ever had originated very markedly in a local affection. I was travelling in the corner seat one day in a very dusty railway carriage. Some of the dust from the window appeared to get into the nostril nearest to it causing me to sneeze. This sneezing fit developed into a one-sided cold in my head, the other nostril remaining quite free for more than a day. The catarrh then seemed to creep round the posterior nares and affect the other nostril. It then passed down into the trachea and finally into the bronchi. For many years I have been very firmly convinced that colds are very infectious and on one occasion I was going to call upon a friend of mine, a very old lady who was confined to the house and attended by her children with the utmost care. I had already driven about a mile or more on my way when I began to think that I had a cold in my head and that I might possibly communicate it to her. I accordingly turned back and I think it was well that I did so, because about a couple of months afterwards I heard that she had remained perfectly well, living in two rooms, until some lady friends called, one of whom had a cold in the head. Immediately afterwards my friend began to suffer from bronchitis and had a most severe attack. It seems to me that very often children convey infection from one to another, and often a child goes to school, comes back with a cold, and then, as the common saying is, "the cold goes through the house." This possibility of infection by children is naturally to be borne in mind in regard to the relations of very old people to them as well as to friends and visitors. It is to be remembered also that people who are apparently perfectly well may carry about disease germs and convey them to others, and that those who have been in constant attendance upon a case of pneumonia, diphtheria, or possibly bronchitis, may convey the germs to others without being apparently affected themselves. It might cause a little trouble but it would be an error on the right side if all those who had been in or near such cases were compelled to disinfect their throats by gargling with an antiseptic before visiting or attending upon old people.

Another point which is worthy of consideration is the effect of dust in producing colds. I have already mentioned the effect of dust from a railway carriage in causing first inflammation in the nostril and then general bronchitis. I do not know whether any experiments have been made upon the specific gravity of microbes, but at the time when I used my consulting room as a library I found very frequently that if I had occasion to consult a book from one of the top shelves I was apt to get a cold in my head. This recurred with such regularity that at last I took to sponging the top of the book with a solution of carbolic acid before using it. Everyone knows what a great amount of dust can be seen in a room after anything has been moved about if the shutters are closed and a ray of sunshine streams through a chink. Some of the floating particles which are then seen in such abundance are probably pathogenic and protection of aged people from infection by dust is therefore I think very important. I have already quoted Pasteur's experiments with fowls, and in guarding aged people from disease we have not only to prevent the access of microbes but also the incidence of depressing conditions. One of these, no doubt, is cold and one very frequently sees that after the occurrence of sudden and

severe cold weather not only is the column of deaths in the *Times* much longer than usual but it contains an unusual proportion of old people. In order to prevent the effect of such cold the clothing should not only be warm and the rooms of a proper temperature but care should be taken that old people do not go out of warm rooms into cold parts of the house. In many houses, although the rooms are warm the passages are very cold, and the most dangerous place of all is probably the water-closet, because here the old patient, who would never dream of going outside the house without being thoroughly wrapped up in the warmest of clothing and protected by rugs, will not only go with nothing on but a thin night-dress, but will remain sitting for many minutes although the closet is quite as cold as the air outside. I lay particular stress upon this point, not only because it is one that I have never seen mentioned but because it was particularly impressed upon me by the death of a patient and friend who had been perfectly well so long as he used a commode in his room but one day he went to the water-closet and caught a chill which was followed by a fatal attack of pneumonia.

A chill of the whole body reduces vitality and renders patients more liable to disease but a local chill is particularly injurious. There is an old adage—

> "If wind blow at you through a hole
> Make your will and sain your soul."

Wind which comes fairly in one's face is little to be dreaded but if wind catches one at the back of the neck, behind the ear, or even at the side of the head, it is much more dangerous. Largely open windows are comparatively safe but a chink through which the air blows with force is to be carefully avoided. One reason of this probably is that wind blowing through a chink causes a more rapid current of air and thus chills the part of the body against which it impinges much more quickly than air moving slowly and still more than air which is not moving at all. Everyone knows how in the Alpine health resorts the temperature may be many degrees below zero and yet cold is not felt so long as the air is still, but whenever the wind begins to blow the cold becomes almost unendurable. There is one kind of draught that many people seem to forget, and that is the draught between the door and the fireplace. If one's hand is placed at the lower edge of a door when a brisk fire is burning in the grate a considerable draught will be felt. This cold air spreads itself out over the floor of the room as it passes along but again collects into a narrower stream close to the fireplace, so that the feet of anyone sitting by the fireside are apt to be swept constantly by the cold air, and thus the body is chilled. To avoid this the chair in which an aged person sits should be placed so far away from the fireplace as to avoid this draught or else the feet should be kept raised by a somewhat high stool so as to be above the level of the draught.

But while we take all due precautions to prevent injury from without we must not forget that one of the most important methods of securing health is to increase the patient's power of resistance. Some years ago a governor-general of Canada asked an Indian, whose clothing was of the scantiest, although the weather was extremely cold, how it was that he was able to go about with[illegible]le clothing without apparently feeling chilled. The Indian said, "You do not cover your face, do you feel cold in the face?" "No," said the governor-general. "Well then," said the Indian, "Indian all face." The scientific explanation of this power of resisting cold was given many years ago by Professor Rosenthal who showed that the peripheral vessels when subjected to a high temperature for a length of time lose their power of contraction when again exposed to cold. In consequence of this the blood continues to pour through the chilled skin and thus the temperature of the whole body is reduced. By training the vessels to alternate heat and cold as we do in our faces and as the Indian did in his whole body they react more quickly to changes of temperature and thus become more efficient regulators of the animal heat. This may be done to a certain extent by daily baths, care being taken, however, that the application of cold is not sufficiently great or sufficiently prolonged to depress the patient and I think one of the best ways is to apply hot water as hot as it can well be borne and then a little cold afterwards just enough to get the reaction. But it is not only the vessels of the skin which require exercise and training. The resistant power of the patient depends very greatly upon the power of his general circulation and the perfection of his respiratory movements. This has been very well pointed out in an admirable lecture "On the Prolongation of Life," delivered by Sir Hermann Weber before the Royal College of Physicians of London three years ago. He himself presents such a splendid example of bodily and mental vigour at the age of 83 that the plan he follows must, I think, be good and I reproduce here the description which he gives of his method:—

> I have mostly commenced with moderately deep inspirations and expirations continued during three to five minutes, once or twice a day, and have gradually increased the exercises to ten minutes or a quarter of an hour. The depth of each inspiration and expiration, and the duration of holding the breath are likewise to be only gradually increased. At the beginning, a sixth or a quarter of a minute for every inspiration and every expiration ought to be sufficient; if this is well borne, each act may be gradually prolonged in duration, so that in the majority of cases each inspiration and each expiration may be brought up to a minute; all the movements are to be made slowly, not rapidly. I usually advise to inspire in the erect position with raised arms and closed mouth, and to bend down the body during expiration so that the fingers touch the ground or the toes. By degrees one can learn to make several up and down movements during every inspiration, and bend and raise the body several times during the expiration. By this alternate bending and raising of the body we gain the additional advantage of strengthening the lumbar muscles, and through this successfully combating the tendency to lumbago. Another useful combination with the respiratory exercises is the turning of the body round the axis of the spinal column alternately, with deep inspiration from left to right and with expiration from right to left with half-raised arms. By this movement we bring into action some of the muscles of the spine which are apt to be only imperfectly used by most persons in advanced years, and the stiffness of the neck and spine, and the tendency to stoop so common in old persons can be to some degree corrected by this kind of movement, if commenced in good time and practised regularly and thoroughly. The swinging of the arms round the shoulder-joint is likewise a useful combination. Other combinations with muscle and joint movements will occur to those who have accustomed themselves to these respiratory movements; but the latter ought always to have our principal attention, since to them the beneficial effect on the heart and lungs is mainly due. In addition to the influence on the circulation, the respiratory movements keep up the nutrition and efficiency of the lungs themselves, which undergo in old age a kind of atrophy; the walls of the smallest divisions and air cells become thinner and a kind of senile emphysema is developed, which by these exercises is to some degree prevented. Another important influence consists in maintaining the elasticity of the chest walls, which are apt to become stiff in old age, and thus to interfere with free movements of the lungs and the pleura. If for some reason the erect position should be inconvenient the mere respiratory movements can be made also in the horizontal and sitting positions.

In addition to the regular exercises to be taken every morning he strongly advises a daily walk for from half an hour to three hours, part to be taken in the morning and part to be taken later in the day, and once a week he recommends a day of more prolonged exercise up to four or six hours, and once or twice a year a walking or climbing tour of three or four weeks. For those who are unable, either from want of natural strength or from want of opportunity, to take the walks recommended by Sir Hermann Weber the exercises which he mentions are strongly to be recommended, and for the patient who is too weak to take even these massage may be employed or to a certain extent substituted.

With advancing years certain organs acquire naturally a greater power of resistance to bacterial invasion, and this is markedly the case with the intestinal canal. In childhood intestinal diseases of *bacterial* origin are the most common and fatal of all, but in old age they are comparatively rare. This statement is, I think, correct in the form in which I have put it, but it might be hazardous to make the broader statement that *microbic* disease of the intestinal canal is rare in the old, for amongst the most common and important causes of death at an advanced age cancer takes a very high place. Whilst in the decade 1891 to 1900 pneumonia is responsible for an annual death-rate of 8089 per 1,000,000, cancer in the same period caused a mortality of 12,201. With the exception of the breast and uterus in females, by far the commonest seat of cancer is the stomach, and next to it come the liver and gall-bladder up to the age of 85 years. After this age the uterus still remains the commonest seat in women and the skin becomes commoner in men, but with this exception the stomach and liver remain the commonest seats of cancer. In the present state of our knowledge it is impossible to decide whether the peculiar kind of growth which characterises cancer cells and resembles that of reproductive cells is initiated by some microbes of a plasmodic nature and belonging rather to the animal than to the vegetable kingdom, or whether it is simply due to irritation, mechanical or chemical. Such stimulation of a chemical nature has been observed by Loeb to produce fertilisation in the eggs of sea urchins. These eggs are usually fertilised by spermatozoids, but if they are simply immersed in stronger brine than that to which they

have been accustomed they become fertilised by the stimulation which this supplies. Whether such stimulation produces similar changes in the tissues of higher animals we cannot at present say, but at any rate we know that the irritation produced in the lip by a pipe or in the gall-bladder by stones is very apt to be followed by cancer. Consequently in order to avoid cancer we ought to try to lessen irritation by all means wherever that may be present, and more especially we ought to prevent it from affecting the pylorus or liver. Now one of the commonest causes of irritation of the pylorus, both mechanical and chemical, is unchewed food which because of its size cannot be penetrated by the digestive juices of the stomach and dissolved. When it tries to pass as a solid lump through the pylorus it either acts as a mechanical irritant during its passage or produces chemical irritation by causing reflex contraction of the orifice and retention of food in the stomach. This retention causes increased acidity, which frequently reaches such an extent as to produce heartburn or vomiting. A little more time spent on the mastication of food might, therefore, be well expended, not only as producing present comfort, but lessening the probability of organic disease. The practice of gobbling may, to a certain extent at least, be responsible for the larger proportion of cancer of the stomach which occurs in men than in women at the age of 55 years, the numbers being 3244 and 2867, while at 65 years the numbers are nearly equal, being 2985 and 2917, and at higher ages they are reversed.

In reference to bacterial invasion no one can speak with more authority than Metchnikoff, and he says that in the alimentary canal no less than 128 billion bacteria are formed daily. Some of these may be useful in assisting digestion, but others are pathogenic and may give rise to toxins dangerous to health or fatal to life. In order to prevent the introduction of "wild bacteria" he advises that no unsterilised food should be taken and he avoids uncooked salad and fruit. Especially to be avoided are strawberries, which are very frequently contaminated by lying on manure which has been spread on the beds, and cherries or plums which have been attacked by birds, because he has seen birds go straight from a manure heap to a cherry tree and thus convey microbes from the former to the latter. Another way of killing such "wild microbes" as may find access to the intestinal canal in spite of all precautions is to cultivate "tame microbes," which will attack and destroy the wild ones without doing any harm to the organism. Amongst the most beneficial of these "tame microbes" is the lactic acid bacillus and the consumption of sour milk containing it is to be regarded as an important means of disinfecting the intestinal canal, of stopping intestinal disturbance, of preventing the formation of toxins, and thus increasing health and prolonging life. These observations and views of Metchnikoff require the careful consideration of all those who are interested in the supply of pure milk, either in town or country, for if they are correct, as I believe them to be, the addition of such preservatives to milk as shall prevent it from turning sour and yet allow other bacteria than the lactic acid bacillus to develop in it, is a proceeding likely to inflict the gravest injury on the public health. It is curious that this new scientific development should so closely agree with the practice which used to prevail in country districts in Scotland, where sour milk and porridge formed the staple food of children as set forth in the old ballad where a schoolmaster says:

> "Gie a bairn his parritch
> And dinna spare the soor douk can,
> An' wi' a penny carritch
> I'll mak' your son a man."

In women, cancer of the liver is much more frequent than in men, being in the proportion of 3 to 2 in all the decades above 55 years. The cause of this is probably to be found in their usually sedentary habits, along with their practice of drinking small quantities of water which tend to produce thickened bile and gall-stones and thus cause greater irritation of the biliary passages.

The question has been raised whether tissues which receive a superabundance of nutriment are more apt to take on cancerous growth than those which are less superiorly nourished. There seems little doubt that cancer is more common among the well-to-do or rich classes than amongst the poor, but it is impossible to say in the present state of our knowledge how far abundant nutrition increases the growth of cancer.

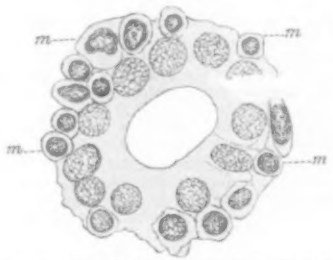
We know more, however, about the effect of diet upon a class of diseases which is much more important and much more fatal amongst the aged than even cancer: I mean diseases of the circulation. In the decade 1891 to 1900, for 12,201 deaths which occurred from cancer above the age of 75 years, no less than 34,822 died from heart disease and 39,662 from diseases of the blood-vessels above that age. Nor does this even cover all the mischief done by diseases of the blood-vessels, for apoplexy, paralysis, and senile decay may all be reckoned as secondary to disease of the cerebral vessels. In his most instructive book, "On the Nature of Man," Metchnikoff mentions that there are two classes of phagocytes in the body, the small or microphags and the large or macrophags. The function of the microphags is to rid us of microbes, that of the macrophags is to heal mechanical injuries, such as hæmorrhages, wounds, and so forth. In the brains of old persons and animals a number of nerve cells are surrounded and devoured by macrophags (Fig. 1), and Metchnikoff thinks himself justified in

FIG. 1

Cell from the brain of a woman, aged 100 years, being devoured by microphags. (From Metchnikoff.)

asserting that senile decay is mainly due to the destruction of the higher elements of the organism by macrophags. Other parts of the body also are not safe from their attacks and the kidneys may likewise suffer (Fig. 2). But the function of the macrophags is not to attack healthy tissues, it is to remove those the vitality of which is destroyed or impaired, and so long as the brain cells are abundantly supplied with blood they will probably be allowed to remain uninjured by the attacks of the macrophags. I think, therefore, that while

FIG. 2.



Section of a renal tubule invaded by macrophags, from the body of an old man, aged 90 years (*m* = macrophags). (From Metchnikoff.)

senile decay may be actually produced by the macrophags we are justified in believing that it really originates in an alteration of the blood-vessels.

Nor is it only in nervous disease that there is alteration in the vessels, for cardiac weakness, which is such an important cause of death in old age, may be traced back also to alteration in the vessels. It is the narrowing of the coronary vessels and consequent imperfect supply of blood to the heart that leads to fatty degeneration of that organ, while, on the other hand, arterio-sclerosis increases the peripheral resistance which the heart has to overcome in keeping up the circulation and thus increases the tendency to cardiac failure on the one hand as well as to apoplexy on the other. Arterio-sclerosis is generally divided into two forms: (1) the nodular or atheroma; and (2) the diffuse form which affects the smaller arteries and corresponds to the arterio-capillary fibrosis of Gull and Sutton. Arterio-sclerosis may therefore be looked upon, *par excellence*, as the great enemy to

longevity, and if it can be prevented or its effects neutralised life will almost certainly be greatly prolonged. It has been long noted that arterio-sclerosis is commonly associated with hypertrophy of the heart and atrophy of the kidneys, and it has been frequently suspected that non-elimination of waste products might be one of the chief causes, if not the only cause. In 1888 Gilbert and Lion found that aortitis could be produced by the intravascular injection of bacterial toxins, especially in a vessel which had been injured mechanically, and their results were confirmed by subsequent observers. In 1903 Josué found that atheroma of the aorta with hypertrophy of the heart could be produced by the prolonged intravascular administration of adrenalin. Erb, junior, obtained a similar result and considered that it might be due partly to a toxic action of the drug on the nonstriated muscular fibres and partly to the high tension produced by the adrenalin. Other experimenters tried the effect of various drugs which raise blood pressure and got similar results—Boveri from tobacco, Fisher from digitalin, Orlovski from strophanthin and adonidin, and what is very interesting Croftan obtained it from the use of hypoxanthin, which, as you all know, is one of the constituents of muscle extract. The whole subject has been taken up by Dr. G. R. Rickett, who has kindly lent me his thesis on the subject from which I have extracted the experiments just quoted. In his own experiments Dr. Rickett not only obtained atheroma by the use of adrenalin and of tobacco, or nicotine, but also of squill and barium chloride. All of these poisons tend to cause continuous high tension in the vessels, and this is the only power which they seem to possess in common.

The process of arterio-sclerosis appears to commence in the breaking up of elastic fibres. In atheroma the fractures are multiple and aggregated, and in arterio-capillary fibrosis they are single and separate. An irritant which would tend to cause inflammation within the vessels but not produce a rise of blood pressure, such as potassium cantharidate, did not produce atheroma and no change was observed in the vasa-vasorum, and it seems unlikely that such extensive changes are due to stretching, more especially when we consider that the lumen of peripheral vessels, both in disease and during the action of the vaso-constricting drugs already mentioned, is diminished below the normal. It seems to me therefore that we must look for some other cause and the most likely one I think is diminished movement in the vascular wall due to high tension and the loss of self massage which occurs in the vessels and maintains in their walls a constant interchange of lymph, for arteries are surrounded by a fibrous sheath inclosing the lymph space in which there is the fluid from which the vascular wall derives its nutriment. Each time that the artery is dilated by the blood forced into it during the cardiac systole the lymph is driven out of the sheath, while at the contraction of the artery during the cardiac diastole, more fluid tends to flow in from the vasa-vasorum (Fig. 3). It is evident that if the difference between

FIG. 3.

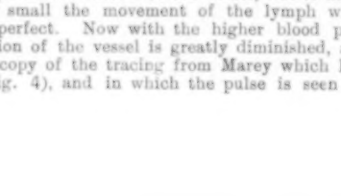
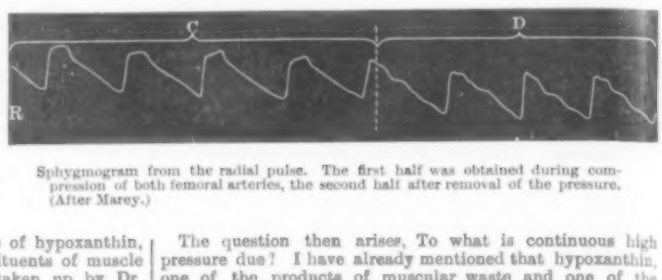


Diagram of the effect of the arterial pulse in aiding the circulation in the veins and self-massage of the artery itself. A is the artery, V the vein, and V the fibrous sheath which incloses them both and also a lymph space which is shaded in the diagram. A shows the artery contracted during the cardiac diastole with the vein distended with blood and the space with lymph. A' is the artery distended with blood by the cardiac systole which at the same time drives the venous blood along and empties the lymphatic space.

the size of the artery at each pulse and at each interval is great, there will be a correspondingly free circulation of lymph in the sheath of the vessel, but if the difference be very small the movement of the lymph will be slow and imperfect. Now with the higher blood pressure the oscillation of the vessel is greatly diminished, as is shown by the copy of the tracing from Marey which I now show you (Fig. 4), and in which the pulse is seen to be full and soft in the ordinary condition; but the oscillation is very small when the pressure is raised by compression of the femoral arteries. Whether the explanation I have given be right or not, it appears to be a fact that continued high tension within the arteries leads to arterio-sclerosis, to degeneration of the vessels themselves, and to liability to rupture. It thus tends to produce apoplexy on the one hand and leads to cardiac hypertrophy, followed by cardiac degeneration and failure on the other.

FIG. 4.



Sphygmogram from the radial pulse. The first half was obtained during compression of both femoral arteries, the second half after removal of the pressure. (After Marey.)

The question then arises, To what is continuous high pressure due? I have already mentioned that hypoxanthin, one of the products of muscular waste and one of the constituents of extract of meat, will produce continuous high tension and atheroma when injected into the vessels. The close association of atrophy of the kidneys with high tension and arterio-sclerosis naturally suggests the thought that the high tension may be due to the retention of waste products in the blood and their continued action upon the vessels. It is quite possible that this is so, and in order to prevent it the natural method of treatment is to lessen the quantity of such substances by reducing the amount of butcher's meat in the diet and increasing elimination by the ingestion of water. But recent researches have shown us that the tissue change in the body is a much more complex thing than was at one time imagined and that the kidneys may not only have the function of excreting urine that is passed out, but of secreting substances which go back into the blood. Some very curious experiments were made by Professor Schmiedeberg a good many years ago. He found that when blood containing benzoic acid was circulated through the vessels of an excised kidney, hippuric acid and not benzoic acid was excreted through the ureter. But, on the other hand, if hippuric acid was passed with the blood through the vessels of the kidneys benzoic acid was excreted through the ureter. The kidneys have thus a reversing action but if they have undergone atrophy such an action will be gradually diminished or abolished. A circumstance which renders this action more worthy of attention is that Oliver has found that hippurates have the power of lowering blood pressure. The secretion of thyroid gland tends to dilate the peripheral vessels and thus to lower the blood pressure, so that in atrophy the pressure tends to rise, and this has been found in atheroma and myxœdema, though how far they are merely coincident, or how far the one is dependent on the other we cannot yet say. An abundant meat diet, as Chalmers Watson has shown, stimulates the thyroid to increased growth, but later leads to atrophy, so that a large proportion of animal food in early life is likely to produce early atrophy of the thyroid with rise of pressure and all its attendant mischief. Lorand goes so far as to say that senile changes are simply a form of myxœdema and are due to atrophy of the thyroid, but excessive action of the other glands may possibly lead to a similar condition, and extensive atheroma at the early age of 59 was found by Parkes Weber in association with adenoma of the suprarenal capsules.

It is clear that early recognition of excessive tension is one of the most important steps towards increasing longevity, and for this purpose it is necessary to have some means of estimating the blood pressure. In the life of a busy practitioner it is impossible to do this unless it can be done quickly and easily as well as accurately. Many instruments have been introduced for the purpose: the earliest to be much used was one made by my old friend, the late Professor von Basch. The form he first used was a mercurial manometer, but this was so awkward in practice that he discarded it and adopted an indiarubber bulb which could be placed above the artery so as to obliterate it, and the obliterating pressure recorded by an aneroid barometer. Various modifications of

this have been used, the most important being that suggested by Riva Rocci and also by Hill and Barnard. This consists in connecting a bag which surrounds the arm with a manometer. Two sphygmomanometers in which fluid is used to register the pressure are Hill and Barnard's small instrument and Oliver's new one. Both of these have the advantage of having a tolerably large scale and indicating the oscillations of pressure more readily than the aneroid. In this way the diastolic pressure can be fairly well ascertained as well as the systolic, and thus not only the maximum pressure obtained but the variations in it through the cardiac cycle, variations of which I have already described the importance. The systolic pressure is taken to be that which suffices to stop the pulse altogether, the diastolic to be that at which the index gives the maximum oscillation. In a recent article Dr. Janeway regards the normal systolic pressure with an armlet 12 centimetres broad as 145 millimetres and that anything under 160 is not to be considered pathological without further evidence. My own observations do not coincide with this as I find that from 100 to 115 or 120 is normal for young adults, from 115 to 135 or 140 for men in middle life, and that above 150 it indicates an abnormal pressure. I am bound to say that I have seen men whose pressure was 180 and they were apparently in perfect health, but I consider these men in a precarious condition and liable to cerebral hæmorrhage on the one hand or cardiac failure on the other.

As a raised blood pressure is itself productive of degenerative changes in the vessels we have good grounds for believing that if the rise be detected early and counteracted by proper regimen and treatment the vascular changes which it would otherwise produce might be prevented and life very considerably prolonged. The earlier this is done the better and I think it is only likely to be done by the sphygmomanometer being used as frequently by the physician as the stethoscope or thermometer is at present, and with an instrument like Potain's modification of von Basch's the pressure can be taken as quickly and as easily as the pulse-rate can be ascertained by the finger. When the tension is found to be above the normal for the age attention should be directed at once to the diet. Butchers meat and strong soups or sauces containing meat extract should be prohibited, or only allowed in very limited quantity. Where the tension is very high it may be necessary to limit the diet very rigidly indeed and only allow farinaceous foods with a small proportion of proteids. I once remember being called to see a case of cardiac asthma. The patient had an income of about £30,000 a year and had a medical man whose sole duty it was to look after him. The first question I asked was whether the urine was free from albumin. I was told that it was, but on getting it I found it to be almost like water, to have a very low specific gravity, and on acidulating it with acetic acid and boiling the top I found a faint haze which is so significant of gouty kidney, but which can sometimes only be seen by boiling the top of the test tube so as to have the lower part for comparison and viewing the top against a dark background. I at once advised that the patient's diet should be cut down to simple farinaceous food and milk, and upon this diet he soon became quite free from his attacks. I then went for a trip on the continent and while I was away I heard of the old man's death. I suppose that someone else had been called in who regarded it as a burning shame that such a rich old man should be put upon a pauper's diet and yet this was all he could stand and a more liberal allowance of food would suffice to kill him. I think everyone must have been struck with the number of old people who die in workhouses. I regret to say that I have been unable to get any account of the numbers above 90 years of age, but in 1901 the proportion of workhouse paupers to 1,000,000 of the total number living at the same age of 85 or upwards was 95,631, that is to say, very nearly 1 in 10. A workhouse diet may not be very pleasing to the palate but it certainly seems an efficient means of prolonging life and it might certainly be worth while sometimes for others to adopt it whose circumstances would allow of them to indulge in luxury.

Amongst other things which tend to lower the pressure are certainly the use of cholagogues and purgatives, mercurial such as blue pill or calomel at night once or twice a week, followed by a saline in the morning, as often as may seem necessary. Iodide of potassium does appear to lessen the tension in many cases, especially when given in large doses, such as from ten to 30 grains three times a day. The most efficient drugs for lowering blood pressure are the nitrites or nitrates, a class of bodies the physiological action of which was so well investigated by the late Professor Leech, whose death in the prime of life was not only a great loss to scientific medicine but a personal sorrow to every one who knew him. Nitrite of amyl and nitrite of iso-butyl have a more rapid action than any other of the series and are useful in cutting short a paroxysm of pain. Nitroglycerine not only has a similar use but it can be given in divided doses during the day to keep the tension low. Nitro-erythrol has, I think, a still slower and more prolonged action and half a grain or more three or four times a day often suffices to keep the tension within moderate limits and completely to prevent attacks of angina, which previously had occurred many times a day. Latterly I have very frequently given nitrate of potash with nitrite of soda to reduce the blood pressure. A dose of 20 grains of nitrate of potash with half a grain to two grains or more of nitrite of soda in a large tumbler of water every morning appears to have a double action in reducing tension firstly by acting directly on the vessels and secondly by clearing out products of tissue waste by virtue of its diuretic action. I described at the meeting of the British Medical Association in Manchester in 1902 the way in which I was led to use this combination, and I was very much interested to find quite recently that the very remedy which I was employing in consequence of pharmacological researches upon its action had been used empirically for the same purpose nearly 450 years ago by Lord Bacon who placed his reliance chiefly on blood letting and the use of saltpetre as the best means of attaining long life.

I have to thank you, Dr. Buckley and Gentlemen, for the honour you have done me in asking me to give you this address, and I must also express my hearty thanks to the Registrar-General, to Dr. J. F. W. Tatham, and to Mr. Finch of the Registrar's Office for the valuable papers with which they have furnished me.

THE BACTERIOLOGY OF ASEPTIC WOUNDS.[1]

BY LEONARD S. DUDGEON, M.R.C.P. LOND.,
BACTERIOLOGIST TO ST. THOMAS'S HOSPITAL; LECTURER ON GENERAL AND SPECIAL PATHOLOGY IN THE MEDICAL SCHOOL AND DIRECTOR OF THE HOSPITAL LABORATORIES;

AND

PERCY W. G. SARGENT, M.A., M.B., B.C. CANTAB., F.R.C.S. ENG.,
ASSISTANT SURGEON TO ST. THOMAS'S HOSPITAL, TO THE NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, QUEEN-SQUARE, AND TO THE VICTORIA HOSPITAL FOR CHILDREN, CHELSEA.

THE subject which we bring forward under an apparently paradoxical title is one which is of pathological as well as practical interest—pathological in that it bears upon certain fundamental and controversial questions such as the boundary line between the physiological and the pathological; practical because it emphasises in no small measure the vital, as opposed to the mechanical, factors which underlie the success of modern surgical operations.

We do not intend to enter into a discussion of the different meanings which have been, and still are, attached to the terms aseptic and antiseptic; but if one may, without wishing to excite party feeling, examine the words themselves, it becomes obvious that they are not mutually antagonistic. The term aseptic can only apply to a state of being; a wound is or is not aseptic according to whether there are or are not present what are commonly recognised as septic processes, bearing in mind that all bacterial activity is not necessarily septic. The term antiseptic on the other hand implies activity; it can only apply to the process or agent which is directed against sepsis. To speak of a system as antiseptic is correct, but to speak of it as aseptic is a misuse of language. All processes which are directed against sepsis are antiseptic, whether they be boiling water or chemical solutions: the result may or may not be an aseptic condition. In this communication we intend to use the term strictly in the sense in which we believe it to be used by the majority of surgeons—namely,

[1] A paper read before the Medical Society of London on Oct. 22nd, 1906.

TABLE I.—CASES IN WHICH NO CHEMICAL ANTISEPTICS WERE EMPLOYED.

Case.	Nature.	Duration of operation.	Wound 1. Surface of wound at conclusion of operation.	Skin.	Wound 2. Exudate from wound at first dressing.	Suture.	Petri dish.	Day of dressing.	Healing.
1	Hernia.	15 minutes.	Staphylococcus albus.	Staphylococcus albus.	Staphylococcus albus.	—	89 colonies; 77 sarcina; rest moulds.	Third.	Primary union.
2	,,	10 ,,	,,	,,	,,	Colon-like bacillus and staphylococcus albus.	30 colonies; 27 sarcina.	,,	,,
3	,,	14 ,,	,,	Staphylococcus albus and a streptococcus bacillus.	,,	Sarcina flava.	34 colonies; 27 sarcina.	,,	,,
4	,,	12 ,,	Sterile.	Staphylococcus albus.	,,	Sarcina aurantia.	159 colonies; 129 sarcina.	Fourth.	,,
5	,,	27 ,,	Staphylococcus albus.	Sterile.	,,	Sterile.	98 colonies; 95 sarcina.	,,	,,
6	Varicose veins.	5 ,,	Sterile.	,,	,,	Bacillus coli.	91 colonies; all sarcina.	Sixth.	,,
7	Hernia.	17 ,,	Staphylococcus albus.	Staphylococcus albus.	—	Streptococcus.	Enormous numbers of colonies.	Fourth.	,,
8	,,	19 ,,	Sterile.	An intermediate staphylococcus.	Staphylococcus albus.	Staphylococcus aureus and staphylococcus albus.	122 colonies; all sarcina flava.	Fifth.	,,
9	,,	17 ,,	,,	Staphylococcus albus.	Sterile.	Staphylococcus albus.	Enormous numbers of colonies.	Fourth.	,,
10	Varicose veins.	4 ,,	,,	,,	,,	,,	13 colonies; 12 sarcina.	,,	,,
11	Hernia.	18 ,,	,,	,,	,,	,,	50 colonies; nearly all sarcina flava.	,,	,,
12	Varicose veins.	5 ,,	Diplococcus.	Sterile.	,,	,,	11 colonies; all sarcina.	Third.	,,
13	,,	5 ,,	Staphylococcus albus.	Staphylococcus albus.	Staphylococcus albus.	,,	16 colonies; chiefly sarcina flava.	,,	,,
14	Hernia.	13 ,,	,,	Staphylococcus aureus.	—	,,	62 colonies; mostly sarcina; rest moulds.	Fifth.	,,
15	,,	12 ,,	Staphylococcus albus and a bacillus.	,,	Sterile.	Staphylococcus albus and staphylococcus citreus.	65 colonies; mostly sarcina flava.	,,	,,
16	,,	13 ,,	Sterile.	Staphylococcus albus and a bacillus.	,,	Staphylococcus albus.	35 colonies; mostly sarcina flava.	,,	,,
17	,,	Not noted.	Staphylococcus albus.	Staphylococcus albus.	,,	,,	Enormous numbers of colonies.	Fourth.	,,
18	Varicose veins.	5 minutes.	Sterile.	,,	,,	Air bacillus.	,,	,,	,,
19	Hernia.	13 ,,	,,	,,	,,	Sterile.	,,	Third.	,,
20	Amputation of breast.	24 ,,	,,	,,	Staphylococcus albus.	Staphylococcus albus.	,,	Fourth.	,,
21	Hernia.	13 ,,	Staphylococcus albus and a bacillus.	,,	Sterile.	,,	Gelatine plate liquefied by a bacillus.	,,	,,
22	Varicocele.	10 ,,	Sterile.	,,	Staphylococcus albus.	Staphylococcus albus and staphylococcus aureus.	,,	,,	,,
23	Hydrocele.	7 ,,	,,	,,	,,	Staphylococcus albus.	,,	,,	,,
24	Hernia.	11 ,,	,,	Sterile.	Sterile.	,,	50 colonies; mostly sarcina.	Second.	,,
25	,,	13 ,,	,,	Staphylococcus albus.	Sarcina alba.	,,	Enormous numbers of colonies.	,,	,,
26	Amputation of breast.	20 ,,	,,	Staphylococcus albus and air bacillus.	Sterile.	Staphylococcus albus; sarcina flava.	—	,,	,,
27	Hernia.	9 ,,	,,	Bacillus subtilis.	,,	Staphylococcus albus and bacillus subtilis.	—	,,	,,
28	Varicose veins.	5 ,,	,,	Staphylococcus albus.	,,	Staphylococcus aureus.	—	,,	,,
29	,,	10 ,,	,,	,,	Bacillus subtilis.	Staphylococcus albus.	—	,,	,,
30	,,	10 ,,	,,	Sterile.	Sterile.	,,	—	,,	,,
31	Hernia.	18 ,,	Staphylococcus albus.	Staphylococcus albus.	Staphylococcus albus.	,,	—	,,	,,
32	,,	10 ,,	Sterile.	Sterile.	Sterile.	,,	—	,,	,,
33	,,	10 ,,	Sarcina flava.	Air bacillus.	,,	,,	—	,,	,,

TABLE I.—CASES IN WHICH NO CHEMICAL ANTISEPTICS WERE EMPLOYED (*Continued*).

Case.	Nature.	Duration of operation.	Wound 1. Surface of wound at conclusion of operation.	Skin.	Wound 2. Exudate from wound at first dressing.	Suture.	Petri dish.	Day of dressing.	Healing.
33A	Hernia.	—	—	—	Staphylococcus albus.	—	—	24 hours.	Primary union.
34	,,	34 minutes.	Staphylococcus albus and bacillus subtilis.	Staphylococcus albus.	Sterile.	Staphylococcus albus.	—	Second.	,,
35	,,	15 ,,	Staphylococcus albus.	Staphylococcus aureus.	,,	,,	—	,,	,,
36	Varicocele.	6 ,,	Sterile.	Staphylococcus albus and bacillus subtilis.	Staphylococcus albus.	,,	—	24 hours.	,,
37	Hernia.	14 ,,	,,	Staphylococcus albus.	Sterile.	Air bacillus.	—	Second.	,,
38	,,	10 ,,	Staphylococcus albus.	,,	Staphylococcus albus.	Staphylococcus albus and air bacillus.	—	,,	,,
39	,,	9 ,,	Sterile.	,,	Sterile.	Staphylococcus albus.	—	,,	,,
40	,,	8 ,,	,,	Air bacillus.	Staphylococcus albus.	Staphylococcus albus and sarcina flava.	—	,,	,,
41	Varicocele.	5 ,,	,,	Staphylococcus albus.	Sterile.	Staphylococcus aureus.	—	,,	,,
42	Hydrocele.	15 ,,	,,	,,	,,	Staphylococcus albus.	—	Third.	,,
43	Hernia.	18 ,,	Bacillus subtilis.	,,	Staphylococcus albus.	Bacillus subtilis.	—	,,	,,
44	Varicocele.	5 ,,	Staphylococcus albus.	,,	Staphylococcus albus and air bacillus.	Intermediate staphylococcus.	—	,,	,,
45	Amputation of breast.	30 ,,	,,	,,	Sterile.	Staphylococcus albus.	—	Fourth.	,,

TABLE IA.—CASES IN WHICH CHEMICAL ANTISEPTICS WERE EMPLOYED.

Case.	Nature.	Duration of operation.	Wound 1. Surface of wound at conclusion of operation.	Skin.	Wound 2. Exudate from wound at first dressing.	Suture.	Day of dressing.	Healing.
46	Hernia.	10 minutes.	Sterile.	Sterile.	Sterile.	Staphylococcus albus.	Second.	Primary union.
47	Varicose veins.	7 ,,	,,	Sarcina alba.	,,	,,	,,	,,
48	,,	2 ,,	,,	Sterile.	,,	Sterile.	,,	,,
49	,,	5 ,,	,,	,,	,,	Staphylococcus albus.	,,	,,
50	Hernia.	25 ,,	,,	Very feeble growth of staphylococcus albus.	,,	Very feeble growth of staphylococcus albus.	,,	,,

as applied to a wound which heals by first intention, exhibits no naked-eye evidence of inflammation, and causes no constitutional disturbance. The term *sterile* we use in the bacteriological sense, and as in no way synonymous with *aseptic*.

It has long been known that an aseptic wound is not necessarily one free from bacteria. In 1887 Bossowski[2] published a series of investigations upon 50 operation wounds, the majority of which healed by primary union, of which he found only ten to be sterile. Of the 40 in which positive results were obtained, 26 gave a growth of a staphylococcus albus and nine of a staphylococcus aureus. In 1892 Professor Welch,[3] in a remarkable address upon the Conditions underlying the Infection of Wounds, drew attention to the frequency with which micro-organisms were found in aseptic wounds, and laid special stress upon that most frequently present—namely a white staphylococcus. The important part which the staphylococcus albus plays in peritonitis was shown by us as the result of a large number of observations published in 1905; and this was followed by further investigations by Dudgeon and Ross[4] upon the great omentum, the work of which still further emphasises the importance of this staphylococcus.

[2] Wiener Medicinische Wochenschrift, No. 8, 1887.
[3] Transactions of American Physicians and Surgeons, 1892.
[4] L. S. Dudgeon and E. A. Ross: Experiments on the Great Omentum. American Journal of Medical Sciences, July, 1906.

Having in our investigations upon the peritoneum ascertained the presence of the staphylococcus albus in so many cases of peritoneal lesions of all kinds—namely in 108 out of 258 cases examined—in which the organism could by no possibility have been derived from the skin, we were led to undertake another series of experiments in order to ascertain whether the conditions of a healing wound were at all similar to those found in the case of the peritoneum. The results of our examination of 50 consecutive cases of aseptic wounds, comprising chiefly operations upon herniæ, varicose veins, and varicoceles, form the basis of this communication.

All but the last five operations were performed by one of us under the conditions now obtaining at St. Thomas's Hospital, the credit of which belongs, in large measure, to Mr. Cuthbert S. Wallace—that is to say, without the use of chemical antiseptics either for the hands, patients' skin, instruments, lotions, or dressings. The last five observations were made under the antiseptic conditions which have for some years been discarded at St. Thomas's Hospital—namely, the cleansing of the patient's skin with 1 in 40 carbolic acid solution, the use of the same chemical for instruments and lotions, and the dressing of the wound with cyanide gauze. But in no case was the solution deliberately brought into contact with the wound itself. We have thus been enabled to eliminate in the first series the errors which arise from the introduction of chemical antiseptics into the culture tubes, for it is well known that even minute amounts

are sufficient to inhibit bacterial growths without destroying the bacteria themselves. A comparison of our cases in which carbolic acid was employed with those in which it was not affords striking evidence of this fact.

Mr. C. B. Lockwood[5] who has, perhaps, done more experiments upon the bacteriology of aseptic wounds than any other observer, acknowledges that chemicals do cling to sutures and skin when introduced into culture tubes, but maintains that their presence does not render the experiment absolutely valueless. From this conclusion we dissent entirely, and when in one series of experiments in which biniodide of mercury had been used for the cleansing of the skin, we read that the hands were sterile 108 times out of 111, we take leave to quarrel with the term "sterile."

Nor can we agree that a surgical operation is a bacteriological experiment. The conditions in the two cases are totally different, for in the one we have an inert culture medium; in the other living tissue cells and active body fluids, which are themselves germicidal. No doubt in the conditions of so-called antiseptic surgery the operation does approximate somewhat to a bacteriological experiment, in that the coagulation of the albuminous fluid and the destruction of a certain amount of tissue by chemical substances, provide a pabulum, comparable to the culture medium, upon which any organisms that may be present can flourish.

Halsted[6] found that the irrigation of fresh wounds with a solution of corrosive sublimate as weak as 1 in 10,000 is followed by a distinct line of superficial necrosis demonstrable under the microscope. Moreover, in entering into this combination with the tissues and fluids of the wound the chemical antiseptic becomes inert, a fact which was recognised as long ago as 1879 by Mr. W. Watson Cheyne.[7]

Before proceeding to give a detailed account of our own work we must refer briefly to an important paper published in 1901 by Schenk and Lichtenstern[8] on the Examination of 43 Abdominal Wounds. These observers included in the wound threads of sterilised silk, which they withdrew at various intervals and tested bacteriologically. They also examined pieces of skin removed at the commencement of the operation and pieces of fat removed at its termination. Their surgical technique included the use of alcohol and corrosive sublimate in the preparation both of the patient's skin and of the surgeon's hands. Of their 43 cases, 39 healed by first intention and four suppurated slightly. Only seven cases, or 16 per cent., were found to be sterile, the staphylococcus albus being the predominant organism. The staphylococcus aureus was found in one case accompanying the white staphylococcus. With one exception the organisms were found to be non-pathogenic. It is of great interest to note that positive results were most frequently obtained on the second day; that a larger proportion were sterile on subsequent days; and that if organisms were still present after the fifth day the aseptic healing of the wound was interfered with. These observers attribute the source of the organisms partly to the air and partly to the patient's skin, but chiefly to the *hands of the operator*. In their opinion the weak point in "aseptic surgery" is the fact that the skin cannot be rendered bacteriologically sterile. This is now becoming generally recognised largely owing to the work of Leedham-Green and other investigators. Whether or not the operator's hands were sterile in our series is beside the point, inasmuch as not only were rubber gloves used but, in addition, the fingers were never brought into contact with the wound.

TECHNIQUE.

Our method of procedure was as follows. The ordinary routine methods in use at St. Thomas's Hospital were adopted. The patient's skin was washed with ether-soap, nail-brush, and hot water; all instruments, basins, towels, &c., were sterilised by heat; rubber gloves were used by the surgeon, the assistant, and the instrument nurse; and no talking was allowed during the time of exposure of the wound. In each case the duration of the operation was noted, and the time of exposure of the Petri dishes was identical with that of the wound. At the conclusion of the operation, and before the wound was closed, a minute piece of skin, including its whole depth, was cut from the edge of the wound and dropped into a broth tube. A platinum loop was then drawn over the surface of the wound in all directions, but avoiding contact with the skin, and with this a second broth tube was inoculated. The wound was then closed with metal clips (Michel's sutures), and dressed with sterile gauze. At varying intervals, noted in each case, the wound was dressed and its appearance was recorded. One of the metal clips was removed with sterilised hooks and dropped into a broth tube, and cultures and films were taken from the exudate obtained by separating the lips of the wound for a quarter to half an inch. The greatest care was taken to avoid the skin edge and to obtain exudate which had not come into contact with the skin.

In every case, even including the five in which chemicals had been employed, primary union occurred; in one instance suppuration was noted at the upper angle of a hernia incision on the ninth day.

Examination of Petri dishes exposed at the time of operation.—In each of the first 25 cases a large Petri dish was exposed as close to the wound as possible for the same length of time as the wound remained open. Large numbers of colonies (see Table I.) were found, in most instances consisting chiefly of various sarcinæ and moulds. A staphylococcus albus was only very occasionally met with, which is of great interest in disposing conclusively of the view that the staphylococcus albus found in these experiments comes from the air. Amongst the very large number of observations upon Petri dishes exposed in operating theatres and elsewhere we have not found a single instance in which the nature of the organisms was determined.

In consequence of our observations it was thought unnecessary to continue exposing Petri dishes in the second half of our series, as we are of opinion that the mere enumeration of colonies of organisms, the vast majority of which are non-pathogenic, is an unprofitable task.

Bacteriological examination of the surface of the wound.—Out of 45 cases treated without chemicals the wound surface was sterile on only 26 occasions, whilst in all those instances in which carbolic acid was used during the operation the culture media remained sterile. In the remaining 19 cases of the first series the staphylococcus albus was obtained in pure culture on 13 occasions, and twice in association with other organisms. We must here emphasise the fact that the greatest care was always taken to avoid touching the skin with the platinum loop as it was drawn over the surface of the wound.

Bacteriological examination of the piece of skin cut from the edge of the wound at the conclusion of the operation.—The skin proved to be sterile six times in the first 45 cases, and no growth occurred in three of the five cases in which chemicals were used. This difference is very striking, for, worked out in percentages, it would appear that the patient's skin, cleansed without chemicals, is sterile in only 14 per cent., whereas the use of carbolic acid raises the percentage of apparent sterility to 60. In the first 45 cases the staphylococcus albus was present in pure culture on 28 occasions, and twice in association with other organisms. Of these other organisms, the only one which we consider of importance was the staphylococcus aureus which was isolated in three instances.

Bacteriological examination of the suture removed at intervals varying from 24 hours to six days after operation.—This was sterile on only two occasions in the first series and once in the second. The staphylococcus albus was obtained in pure culture in 22 out of the first 45 cases, and eight times in association with other organisms. In the remaining five cases it was found four times in pure culture. In one instance a highly pathogenic colon bacillus was obtained from a suture. This was a case of Trendelenburg's operation for varicose veins in which the wound healed by primary union. The staphylococcus aureus was present twice by itself and twice in association with the staphylococcus albus. All these cases healed by first intention.

Bacteriological examination of the exudate at the time of removal of the suture.—This was sterile in 24 of the first 45 cases, and gave no growth in any of the five cases treated antiseptically. Of the remaining 20 cases examined, the staphylococcus albus was present 17 times in pure culture and once in association with a bacillus.

Bacteriological examination of the single case of suppuration.—This case (Case 35) was one of radical cure of hernia, the duration of operation being 15 minutes. From the piece of skin taken at the time of operation a pure culture of staphylococcus aureus was obtained which was *non-pathogenic* to guinea-pigs. The wound was dressed 40 hours after operation when it presented no appearances

[5] Lettsomian Lectures, Medical Society of London.
[6] Quoted by Welch, loc. cit.
[7] Transactions of the Pathological Society of London, vol. xxx.
[8] Zeitschrift für Heilkunde, vol. xxii., 1901.

differing from the rest of the cases. There was no rise of temperature throughout. The exudate at the end of 40 hours was sterile, while the suture gave a pure culture of staphylococcus albus. The polymorphonuclear neutrophiles in the exudate amounted to 86 per cent. When the sutures were removed on the seventh day the wound had firmly healed by primary union. On the ninth day slight superficial suppuration was noticed at the upper angle of the wound, three inches from the spot from which the exudate had been obtained on the second day. From the pus a pure culture of staphylococcus aureus was obtained which was pathogenic to guinea-pigs, producing a local abscess at the site of inoculation. Films of the pus showed 93·75 per cent. of polymorphonuclear neutrophiles and numerous extracellular cocci. The wound was soundly healed in a few days and there were no constitutional symptoms.

ASEPTIC FEVER.

One point of importance in connexion with these results is their bearing upon the so-called aseptic traumatic fever. In all our cases there was a pyrexia of from 99° to 100° F. for two or three days after operation, and this is well known to occur in many other instances of aseptic inflammation, such as the healing of a simple fracture. In connexion with our work on peritonitis, we drew attention to the fact that "in cases of ruptured tubal pregnancy, a febrile condition is usually present both before and after operation, which is quite independent of suppuration or of pulmonary or other complications. The fever lasts for a varying period after operation, and in most cases its range is not excessive, but in nearly every instance it is remarkably higher and more constant than after any other operation which runs an aseptic course. Slight as are the pathogenic properties of the staphylococcus albus, we are of opinion that the febrile disturbances so frequently found after effusion of blood into the peritoneal cavity are due to the presence of this organism, and not to any hypothetical toxic substance produced by the coagulation of the blood." The conclusion which we then arrived at in connexion with the pyrexia of ruptured tubal pregnancy we now believe to apply also to the slighter degree of pyrexia which occurs in connexion with the smaller wounds now under discussion.

CYTOLOGICAL EXAMINATION OF EXUDATE.

Erythrocytes.—In all cases the red cells showed very marked changes. They were broken up and appeared in the films either as minute dots or were very much distorted and only a fraction of the original size. On the view that polychromatophilia occurs in degenerated erythrocytes, one might expect to find it well marked in many of these fragmented or distorted cells, but this does not occur. We have only seen polychromatophilia on one or two occasions and then only of a very slight degree. On the other hand, those who give support to the theory that this abnormal condition occurs in regenerated cells, are able to obtain some confirmation from these observations. Granular degeneration was not observed in any instance. There was little evidence to show that the macrophages or microphages had acquired any special phagocytic property for the broken-up red cells, which is certainly contrary to what one would have expected.

Leucocytes.—It is usually considered that an increase of the polymorphonuclear neutrophiles to 80 per cent. or over is suggestive of an inflammatory lesion which may or may not be suppurative. In the present series of cases, fluid taken from wounds which were healing perfectly has shown in 13 cases that the polymorphonuclear neutrophiles amounted to 80 per cent. or over and in six cases even over 90 per cent. We do not know, however, the total number of these cells per cubic millimetre in the general blood stream. It is certainly uncommon in our experience for an increase of the polymorphonuclear neutrophiles up to 90 per cent. or more to occur apart from a well-marked inflammatory lesion. Some increase of these cells is known to occur in simple fractures and in patients whose operation wounds are healing or have healed by first intention without any naked-eye evidence of local reaction. This observation is therefore of interest, more especially as the wounds were generally sterile, although the sutures were otherwise. In some instances the polymorphonuclear cells were below the average number met with in normal blood with a corresponding increase in the mononuclear cells, yet, there was no difference in the clinical course of the two classes of cases. Eosinophilia of 2 per cent. or more was noted in 10 instances—that is to say, far more eosinophiles were found in the fluid from a healing wound than in normal blood. Dudgeon and Ross have quite recently shown that these cells play an important part in the very earliest stages of inflammatory processes in animals.[9] It is probable that this fact may have some bearing on the eosinophilia met with in our cases, although the wounds were examined at a much earlier period by Dudgeon and Ross than by us. Degenerative changes, consisting of coarse vacuoles in the micro- and macro-phages, were of common occurrence. As many as eight and ten vacuoles were noticed in some cells and many of these were shown to be fatty. Even in those instances in which fat could not be demonstrated it may previously have been absorbed, leaving a clear vacuole. The nuclei of the polymorphonuclear neutrophiles in some instances showed marked degenerative change but at other times appeared to be normal. Intracellular cocci and bacilli were not seen in the film preparations from the wounds in any of our cases but some were observed in the phacocytes present at the seat of inoculation in the infected guinea-pigs.

TABLE II.—*Differential Count of the Cells from the Fluid in a Healing Wound.*

Case.	Day on which fluid was examined.	Number of cells counted.	Polymorphonuclear neutrophiles.	Coarsely granular eosinophiles.	Mast cells.	Small lymphocytes.	Large lymphocytes.	Large hyaline.	Transitional leucocytes.	Endothelial cells.
3	Third.	400	64·5	0·75	—	17·25	8·25	9·25	—	—
4	,,	200	62·5	1·5	—	22·5	7·5	5·5	0·5	—
6	Sixth.	100	69·0	4·0	—	3·0	18·0	5·0	1·0	—
8	Fourth.	100	75·0	3·0	—	11·0	10·0	1·0	—	—
9	Third.	500	48·0	5·4	0·2	24·6	13·4	8·2	0·2	—
10	,,	400	72·0	0·25	—	12·5	9·25	6·0	—	—
11	,,	300	81·0	0·3	—	4·6	6·6	7·3	—	—
12	,,	400	58·25	1·25	—	15·75	17·0	7·75	—	—
13	,,	400	53·75	0·75	0·25	20·0	15·0	9·5	0·75	—
16	Fifth.	300	38·5	9·0	4·0	7·5	12·5	—	—	28·5
17	Third.	200	72·5	2·0	—	9·0	7·5	9·0	—	—
18	,,	300	85·3	0·3	—	1·3	5·6	6·0	—	1·3
19	,,	500	75·0	0·4	—	14·8	4·6	5·2	—	—
20	Fourth.	100	68·0	1·0	—	13·0	12·0	6·0	—	—
21	,,	300	63·6	1·0	0·3	18·6	10·3	6·0	—	—
22	,,	200	30·0	2·0	1·0	28·0	28·5	9·0	—	1·5
24	36 hours.	500	98·4	0·0	0·2	0·4	0·8	0·2	—	—
25	Second.	300	81·0	0·3	—	0·0	14·0	4·6	—	—
26	40 hours.	500	94·0	0·2	—	5·0	0·4	0·2	—	0·2
27	Second.	300	77·0	0·0	—	4·6	14·3	4·0	—	—
28	,,	400	98·0	—	—	1·0	0·5	0·5	—	—
29	,,	400	63·0	4·25	0·75	14·0	8·5	9·5	—	—
30	,,	400	52·5	3·75	0·25	24·0	10·5	9·0	—	—
31	,,	400	67·25	0·5	—	20·75	6·25	5·25	—	—
32	,,	400	69·25	0·75	0·25	16·25	4·25	8·5	—	0·75
33	,,	200	93·5	—	—	0·5	2·0	1·0	—	3·0
33A	24 hours.	400	95·25	—	0·25	2·0	0·5	2·0	—	—
34	Second.	400	78·75	2·5	—	3·75	6·5	7·25	0·5	0·75
35	,,	100	86·0	—	—	5·0	3·0	6·0	—	—
35A*	Ninth.	400	93·75	—	—	—	—	6·25	—	—
36	24 hours.	400	77·75	2·0	0·25	5·25	9·25	5·0	—	0·5
38	Second.	400	63·5	1·25	0·25	20·0	7·25	7·5	—	0·25
39	,,	300	85·3	0·3	—	4·0	4·3	5·0	—	1·0
40	,,	400	82·5	0·75	0·25	6·5	5·0	5·0	—	—
41	,,	400	69·25	0·25	—	15·0	7·75	7·75	—	—
42	Third.	100	82·0	1·0	—	6·0	8·0	3·0	—	—
43	,,	400	70·25	1·5	0·25	10·75	6·75	10·5	—	—
44	,,	400	64·5	1·25	—	21·5	7·5	5·25	—	—
46	Second.	400	79·5	0·25	—	11·75	4·0	4·25	0·25	—
47	,,	400	69·5	1·0	—	10·75	10·0	8·75	—	—
48	,,	200	71·5	0·5	—	19·5	1·0	7·5	—	—
49	,,	300	72·3	1·3	—	9·0	8·0	9·3	—	—
50	,,	200	67·5	—	—	23·5	5·5	3·5	—	—

* Suppuration.

[9] L. S. Dudgeon and E. A. Ross: Phagocytosis, Transactions of the Pathological Society of London, 1906, vol. lvii.

TABLE III.—*Bacteriological Examination of Wound and Sutures in those Cases in which the Polymorphonuclear Cells amounted to 80 per cent. or over.*

Case.	Percentage of cells.	Healing of wound.	Bacteriological examination.	
			Wound.	Suture.
11	81·0 in 300	Perfect.	Sterile.	Staphylococcus albus.
18	85·3 ,, 300	,,	,,	An air bacillus.
24	98·4 ,, 500	,,	,,	Staphylococcus albus.
25	81·0 ,, 300	,,	Sarcina alba.	,,
26	94·0 ,, 500	,,	Sterile.	,,
28	98·0 ,, 400	,,	,,	Staphylococcus aureus.
33	93·5 ,, 200	Perfect; air in wound.	,,	Staphylococcus albus.
33A	95·25 ,, 400	,,	Staphylococcus albus.	—
35	86·0 ,, 100	Perfect.	Sterile.	Staphylococcus albus.
35A	93·75 ,, 400	Suppuration.	Staphylococcus aureus.	—
39	85·3 ,, 300	Perfect.	Sterile.	Staphylococcus albus.
40	82·5 ,, 400	,,	Staphylococcus albus.	Staphylococcus albus; sarcina flava.
42	82·0 ,, 100	,,	Sterile.	Staphylococcus albus.

TABLE IV.—*To Illustrate those Instances in which the Coarsely Granular Eosinophiles amounted to 2 per cent. or over.*

Case.	Percentage of cells.	Healing of wound.
6	4·0 in 100	Perfect.
8	3·0 ,, 100	,,
9	5·4 ,, 500	,,
16	9·0 ,, 200	,,
17	2·0 ,, 200	,,
22	2·0 ,, 200	,,
29	4·25 ,, 400	,,
30	3·75 ,, 400	,,
34	2·5 ,, 400	,,
36	2·0 ,, 400	,,

THE RELATION OF THE STAPHYLOCOCCUS ALBUS TO ASEPTIC WOUNDS.

In the Erasmus Wilson lectures,[10] 1905, we brought forward evidence to show that the staphylococcus albus was the most important organism in peritoneal infections. It was constantly present in the blood clot in intraperitoneal hæmorrhage; it was often found in the peritoneal cavity in appendicitis and in many other varieties of peritonitis. It was an organism of low virulence but, in our opinion, played an important part as a defensive agent in peritoneal infections. Dudgeon and Ross have shown that the staphylococcus albus can often be cultivated from the great omentum of normal animals and also from the human omentum in cases in which the peritoneal cavity is quite healthy,[11] whilst after intraperitoneal injections of sterile normal saline or sterile chalk in normal saline into the peritoneal cavity of guinea-pigs, this organism was shown to be of common occurrence. It is also not uncommonly met with in the fluid obtained from acute tuberculous arthritis, neoplasms, and from various infective processes. R. L. Randolph[12] has made a bacteriological examination of the conjunctiva in 100 cases of typhoid fever. In 59 instances the staphylococcus albus was obtained in pure culture and in 23 cases in association with other bacteria—that is to say, it was present in 82 per cent. of the cases. In 48 cases of acute lobar pneumonia the conjunctiva was also examined and in these the staphylococcus albus was found in pure culture in 24 cases and in association with other bacteria 14 times—that is to say, in about 77 per cent. of the cases.

In the present series the staphylococcus albus was by far the commonest organism met with in aseptic wounds. In no instance was it found to produce any suppuration in the tissues from which it was isolated or when inoculated into animals. On numerous occasions it produced a local reaction at the seat of inoculation in animals but nothing more. It might be suggested that in these cases it was the common variety of staphylococcus met with in the skin—the staphylococcus epidermidis albus of Welch. This organism is more difficult to identify, however, than is usually supposed. The methods which have always been relied upon are probably of little or no value, but, quite apart from this fact, a staphylococcus which has been met with so commonly and from such various sources cannot always have a skin origin. We have recently employed an elaborate method for the identification of the various staphylococci based on the valuable work which has been done by Mervyn Gordon. Unfortunately, the staphylococci which we found in peritoneal infections were not subjected to these tests because they were unknown to us, but during the last 18 months one of us (L. S. D.) has carefully examined very large numbers of cultures of staphylococci obtained from every possible source. These results will be published at some future date.

It has frequently been stated that the staphylococci which have been found in aseptic wounds are derived from the skin of the surgeon's hands; in our cases this source of origin can be eliminated, as not only were rubber gloves worn by all those who took part in the operations but no wound was touched by anything but the sterilised instruments. It has also been considered probable that the white staphylococci present in aseptic wounds are really derived from the air and fall into the wounds during the time of the operation. We have definitely shown that this view is erroneous. We cannot agree that these cocci which have been cultivated so frequently in these experiments always come from the skin of the patient. We have examined the staphylococci obtained from the skin at the time of the operation and from the exudate and ligatures some few days later by Gordon's tests, and have been able to prove that the organism present in the skin is not identical with that which has been found in the exudate or upon the suture. We might here quote an instance to show the accuracy of these tests; a staphylococcus aureus obtained from a skin abscess (Case 35A, Table II.) was subjected to a complete examination by Gordon's tests. It was then inoculated into the leg of a guinea-pig and when recovered from the abscess which formed at the seat of inoculation gave the same cultural tests as it had done previously. It was again inoculated into the leg of another guinea-pig and when recovered from the abscess which formed on this occasion the cultural properties were almost identical with those obtained in the former cases. It will thus be readily seen that by this means we are able to form an accurate opinion of the relationship of the staphylococci obtained from various sources, which it was impossible to do previously to the work of Mervyn Gordon.

It is probable that the staphylococcus albus which is found in the skin, in aseptic wounds, and in various inflammatory processes really takes an active part in non-suppurative inflammation. We have already suggested that this was so in our work on peritonitis. Randolph, in the paper to which we have already referred, has arrived at a similar conclusion. He says: "I am confirmed in the belief that this organism (staphylococcus albus) is an inevitable inhabitant of the conjunctival sac, and that among the defensive organisms either by its numerical superiority or by its products, it may aid in rendering this part of the body a soil unfavourable for the growth and multiplication of those bacteria which are regarded as especially pathogenic for the eye, and which occasionally find their way into this location, more often, I believe, than is generally thought. The possibility is suggested thus that this organism, slightly pathogenic and quite numerous in the conjunctival sac, gives rise to conditions which are antagonistic to such organisms."

It is, of course, a well-known fact that the white staphylococcus is found in skin diseases and in suppurative lesions elsewhere in the body, but this is no argument against the

[10] L. S. Dudgeon and P. W. G. Sargent: The Bacteriology of Peritonitis (Constable, London, 1905).

[11] Loc. cit.

[12] R. L. Randolph: Bacteriological Examination of the Conjunctival Sac in Typhoid Fever and in Pneumonia, Bulletin of the Johns Hopkins Hospital, October, 1906.

view put forward by us. We have only to refer to the case of the colon bacillus for another example of an organism which is normally found in the intestines and which is said to have definite physiological functions to perform, yet under certain abnormal conditions it often proves to be extremely pathogenic.

DELAYED CHLOROFORM POISONING:

A CLINICAL STUDY WITH A REPORT OF THREE FATAL CASES.

BY E. D. TELFORD, M.A., B.C. CANTAB., F.R.C.S. ENG.,
SURGEON TO THE MANCHESTER HOSPITAL FOR SICK CHILDREN, PENDLEBURY;
AND
J. L. FALCONER, M.B., CH.B. VICT.,
RESIDENT MEDICAL OFFICER, THE MANCHESTER HOSPITAL FOR SICK CHILDREN, PENDLEBURY.

CASPER in 1850 was the first to suggest the possibility of death from the delayed action of chloroform. In the same year Langenbeck published a case in which he attributed the fatal result to the same cause. Langenbeck's report is noteworthy as mentioning the discovery of a fatty liver at the post-mortem examination. Since 1850 much has been written on this subject and many cases have been reported. It is possible to collect more than 70 cases from the literature now available. Of these cases many are open to criticism and in some the fatal result would appear to have been due to some cause other than chloroform. Some were the result of poisoning by drugs, such as iodoform or carbolic acid, whilst in others death may reasonably be attributed to acute septic intoxication. After critical examination there remain some 30 cases, the features of which justify their claim to be regarded as instances of the delayed action of chloroform. There is a striking resemblance in the clinical features of these cases. Vomiting, often severe and continuous, is seen in all of them, the vomited matter in some being described as "like beef-tea" or as "coffee-ground vomit." The patient's mental condition is changed. He may be drowsy, listless, and apathetic, and this condition may deepen into coma before death. In some instances a preliminary stage of restless excitement or of delirium is seen. The pulse-rate is quickened and towards the end is running and beyond count. The temperature is sometimes normal, sometimes very high just before death. Air hunger, acetone in the breath and urine, and some degree of cyanosis are usually present. In the majority of cases the symptoms develop within 36 hours and terminate within three or four days from the administration of the anæsthetic. On post-mortem examination the most striking and constant feature is the fatty degeneration of the liver. This degeneration of the liver is usually so marked that some writers have described the colour of the organ as "canary yellow." Fatty degeneration is also seen in the heart, the kidneys, and often in the gastric mucosa, whilst in other cases these organs are the seat of cloudy degenerative changes. These represent the constant and essential lesions. It is noteworthy that the condition of the central nervous system is hardly mentioned throughout the whole series of reported necropsies. The following three cases appear to us worthy of being recorded as instances of death from the delayed action of chloroform. These cases have occurred in the practice of the Manchester Hospital for Sick Children within the last 15 months. For Case 1 we are indebted to Mr. W. P. Montgomery; Cases 2 and 3 have occurred in our own practice.

CASE 1.—A girl, aged three years, was admitted on July 17th, 1905, for a complete cleft of the hard and soft palate. She was a healthy and well-nourished child with no history of previous illness. On July 19th the palate was closed by Lane's method; the anæsthetic was chloroform and no antiseptics were used. On recovering from the anæsthetic the child vomited four times within 12 hours. Beyond this there was no further vomiting. The temperature that evening was 102° F. On the following day the child appeared to be normal except that the temperature was still between 100° and 101°. 50 hours after operation the patient was noted to be drowsy and within an hour of this she became deeply comatose, the pulse was feeble and running, and the respirations rapid, deep, and laboured. The throat and palate were clean; the heart and lung sounds were normal. There was no odour of acetone in the breath but a trace of acetone was present in the urine. A blood count showed no leucocytosis and agar cultures of the blood were negative. The child rapidly sank and died within seven hours of the onset of symptoms.

Necropsy.—The liver was of canary yellow colour, both externally and on section. Microscopically it showed intense fatty degeneration. The other organs were all normal to the naked eye but as the nature of the case was not at that time suspected they were unfortunately not retained for microscopic examination.

CASE 2.—A boy, aged two and a half years, was admitted on Jan. 26th, 1906, for the radical cure of a right inguinal hernia. The child was large and fat and showed evidence of rickets. On Jan. 27th he was noted to have vomited twice but on the 28th appeared to have fully recovered. On the 29th a radical cure of the hernia was done by Bassini's method. The operation was straightforward and lasted for 25 minutes. The anæsthetic was chloroform which was not taken well, although the child's condition gave rise to no real anxiety. No antiseptic was used. The following morning the patient was quite well and had passed a good night. In the afternoon about 3 P.M. he vomited a small amount of bile-stained material but at 6.30 was seen and appeared quite well. At 7.30 he was reported by the sister as being "rather poorly." When seen by one of us at 7.40 his condition was very grave. The child was white, collapsed, and cold, with quick sighing respirations; the pulse was very rapid and almost imperceptible. There was no smell of acetone in the breath. Death ensued in less than ten minutes and was preceded by copious gushes of "coffee-ground vomit." There was no rise of temperature from first to last.

Necropsy.—The site of the operation wound was quite healthy. The liver showed fatty degeneration in a marked degree. The gastric mucosa at the cardiac end was studded with small petechial hæmorrhages. The kidneys and heart showed slight fatty degeneration. The medulla oblongata appeared quite normal on naked-eye examination. The other organs, including the spleen, the pancreas, the intestines, the lungs, and the thymus, appeared quite healthy. A microscopical examination was made by Professor Walker Hall of Bristol who was at that time pathologist to this hospital. His report states: "All the organs show fatty changes. These are most marked in the liver and kidneys. In the liver the fat is present as large globules at the outer edge of the lobes, as well as situated in small masses in the central area. In the kidney the deposit of fat is most marked in the proximal convoluted tubules, but is also present in the distal convoluted tubules, in the walls of the glomerular vessels, and in the interstitial tissue. There are slight fatty changes in the cardiac muscle cells, and in the spleen there are some cells which are loaded with globules of fat. The tissues which contain fat and those in immediate relation thereto present the appearance of cloudy swelling. There were no changes seen in the cells of the medulla oblongata."

CASE 3.—A girl, aged eight years, was admitted on August 28th, 1906, for deformities of the lower extremities due to severe rickets. On August 30th subcutaneous osteotomy of the right femur and left tibia was done. The anæsthetic used was chloroform, anæsthesia being induced by five cubic centimetres of ethyl chloride. No antiseptic was used. The operation lasted 15 minutes. When seen at 10 P.M. on the same day the child did not look well and the pulse was rapid and thready. There had been no post-operative vomiting. At midnight the temperature was 101° F. On the following morning the temperature was 99·2° and the pulse was 154 and thready in quality. The child was extremely restless and had not slept since the operation. The mental condition appeared to be one of commencing coma. The urine contained both diacetic acid and acetone. Sodium bicarbonate was given by the mouth in ten grain doses every four hours. At midnight the temperature was 103·6°, the pulse-rate was 160, and the respirations were 54 and very shallow. The child was very restless and slightly delirious. During the following day the condition remained the same, but at 10 P.M. the patient was much quieter, being semi-comatose with contracted pupils. The temperature was 104°, the pulse was 168, and the respirations were 56. At 10.45 P.M. the patient suddenly collapsed; the pulse could not be felt; there was cold and clammy perspiration. Soon afterwards she rallied slightly, but the eyes were very sunken and the face was blue in colour. At 11.30 P.M. 30 ounces

of saline solution were infused into the left median basilic vein. The child recovered colour and became quite warm again. The pulse came back and was 154 per minute and of good volume. The child, however, died suddenly at 5 A.M. on the following morning, death being preceded by cyanosis. In this case death ensued within 60 hours of the first onset of symptoms. There was no vomiting at any time.

Necropsy.—The operation area appeared quite healthy on both extremities. Cultures on agar-agar taken from the sawn ends of the bones proved sterile. The liver was fatty to a moderate extent only; the other viscera showed nothing abnormal to the naked eye. A microscopical examination was made by Dr. W. Mair, pathologist to the hospital, and he reports: "The liver shows fatty degeneration, equally marked throughout the lobule. The kidneys show very marked fatty degeneration in Henle's loop and the collecting tubules. The convoluted tubules are free from fat. The heart shows no fatty degeneration. The gastric mucosa shows some scattered fatty degeneration of the epithelium. There is no evidence of fat in the lungs." The medulla oblongata of this case shows certain changes, which may, however, be attributed to the fact that it was immersed after removal in a 5 per cent. solution of formalin.

The occurrence of these cases in our practice prompted us to carry out a series of observations on the post-anæsthetic condition of children. The total number of children examined from this point of view was 118. In each case notes were made before operation as to the child's general condition, the presence of any septic focus, and the composition of the urine as regards albumin, casts, diacetic acid, and acetone. The nature of the operation, the anæsthetic used, and the length of its administration were next recorded. After the narcosis the pulse, temperature, and respirations were noted at four-hourly intervals; the frequency and nature of the subsequent vomiting were recorded on the chart and in each case a careful watch was kept for any symptoms which might have suggested the delayed action of the anæsthetic used. The first specimen of urine available after operation was examined for albumin, casts, diacetic acid, and acetone. This examination was afterwards carried out at intervals of 24 hours, the investigation being continued for at least five days in each case, and where thought necessary for a still longer period. We have also endeavoured to ascertain the effect produced by the dietetic changes incident on the preparation for a surgical operation, and to this end we have caused 25 children to undergo the ordinary routine preparation. These children were not anæsthetised but were examined subsequently on the same lines as those submitted to an anæsthetic. The results we have obtained from this work may be summarised as follows:—

1. *Pre-anæsthetic examination.*—Of 143 cases examined, 17 contained diacetic acid in the urine and 30 showed the presence of acetone. Of the 143 cases, 33 showed some focus of sepsis, and of these 12 proved to have diacetic acid and acetone in the urine. These cases with aciduria appeared otherwise in normal health. The examination for albumin and casts was negative throughout.

2. *Post-anæsthetic examination.*—The agents used were: chloroform by the open method introduced by ethyl chloride (53 cases); ethyl chloride alone (18 cases); and ether alone (9 cases). In the series as a whole, the examination of the pulse, temperature, and respirations yielded nothing worthy of note. Of the 118 anæsthetised cases, vomiting was seen in 34, and in only four of these could it be described as unusual in amount. No case showed either albumin or casts. The results as regards diacetic acid and acetone are worthy of separate mention.

Series A.—Chloroform alone, 38 cases. Diacetic acid was found in 32 cases. In 24 of these it disappeared within 24 hours. In the remaining 8 it lasted for periods of 5, 4, 5, 2, 4, 6, 3, and 2 days. Acetone was found in 35 cases. In 25 of these it disappeared within 24 hours. In the remaining 10 it lasted for periods of 4, 5, 5, 5, 3, 3, 4, 3, 4, and 7 days.

Series B.—Chloroform introduced by ethyl chloride, 53 cases. Diacetic acid was found in 43 cases. In 27 of these it disappeared within 24 hours. In the remaining 16 it lasted for periods of 5, 2, 4, 4, 3, 2, 4, 2, 5, 6, 4, 2, 5, 5, 2, and 3 days. Acetone was found in 47 cases. In 30 of these it disappeared within 24 hours. In the remaining 17 it lasted for periods of 4, 5, 4, 4, 2, 2, 4, 5, 4, 2, 6, 4, 3, 6, 5, 2, and 2 days.

Series C.—Ethyl chloride alone, 18 cases. Diacetic acid was found in 12 cases. In 9 of these it disappeared within 24 hours. In the remaining 3 it lasted for periods of 2, 2, 2 days. Acetone was found in 15 cases. In 10 of these it disappeared within 24 hours. In the remaining 5 it lasted for periods of 2, 3, 4, 2, and 2 days.

Series D.—Ether, 9 cases. Diacetic acid was found in 7 cases. In 3 of these it disappeared within 24 hours. In the remaining 4 it lasted for periods of 3, 4, 3, and 3 days. Acetone was found in 8 cases. In 2 of these it disappeared within 24 hours. In the remaining 6 it lasted for periods of 2, 3, 3, 4, 4, and 3 days.

Series P.—Cases prepared but not anæsthetised. Of these 25 were examined and in no case was diacetic acid or acetone found in the urine subsequently to the preparation.

It would appear from these results that (1) chloroform, ether, and ethyl chloride may produce a temporary aciduria; (2) so far as is shown by the ordinary routine clinical tests this aciduria occurs not invariably but in the vast majority of cases; (3) ethyl chloride, either when given alone or when used as an introduction to chloroform, does not appear to differ from other anæsthetics as regards the post-anæsthetic aciduria; (4) there is no relation between the duration of the aciduria and the length of time during which the anæsthetic is administered; (5) the acid bodies occur frequently in the urine of patients in apparently normal health and general anæsthesia appears to have no special prejudicial action in these cases; and (6) the change of diet involved in preparation for a surgical procedure does not appear to produce aciduria.

The delayed action of chloroform may undoubtedly cause death but we have as yet no satisfactory explanation of this fact. Of the suggested explanations the most attractive is that which supports an analogy between delayed chloroform poisoning and the phenomena of acid intoxication. We may broadly define acid intoxication as a condition in which we meet with a certain group of clinical manifestations existing with the presence in the blood and urine of certain acids. This condition is found in many different degrees of intensity and appears to owe its origin to many different causes. Of these causes induced anæsthesia is certainly one. The presence in the urine of acetone and its allies in small quantities may be regarded as physiological, but in acid intoxication the output is much increased. The exact source of the acetone is unknown. Its chemical relationships, no less than its appearance in starvation and after the ingestion of oleic acid, suggest its origin from fat. Recent research, however, would regard it as a derivative of proteid. The acetone itself cannot be regarded as the actual cause of the symptoms but must be viewed as the outward and visible sign of some grave metabolic change the nature of which is not only unknown but may not even be the same in every case. The clinical features of acid intoxication are well illustrated in the cyclic vomiting of children. The symptoms of this disease are profuse and persistent vomiting, with drowsiness, stupor, or coma, obstinate constipation, and the presence of acetone in the breath and urine. The attacks tend to recur periodically and although regarded as "nervous" in origin appear to be frequently induced by dietetic errors. The condition usually lasts for a few days, and although in the course of the case the patient's state may appear very grave, yet rapid and complete recovery is the rule.

The resemblance between this disease and delayed chloroform poisoning has led to the suggestion that the fatal cases which had been attributed to the delayed action of chloroform are merely instances of cyclic vomiting precipitated by the use of a general anæsthetic. We have notes of two cases which are of interest in this connexion as instances of patients subject to cyclic vomiting having been submitted to chloroform anæsthesia without any untoward result.

CASE 1.—A girl, aged eight years, mentally defective, was anæsthetised with chloroform during 40 minutes for sequestrotomy. Ten days before the operation she had had a typical attack of cyclic vomiting. The post-operative history was quite without incident.

CASE 2.—A girl, aged five years, was anæsthetised with chloroform for 15 minutes for tenotomy. Six days before the operation she had had an attack of cyclic vomiting which lasted for three days. Recovery from the operation was uneventful, but in ten days from the day of operation she underwent a second attack of cyclic vomiting. From this attack she recovered promptly and completely.

Despite some resemblance in the clinical features of cyclic vomiting and delayed chloroform poisoning the difference

in prognosis and in post-mortem findings negatives the idea of any intimate relationship between the two conditions. If the key to the problem of death from the delayed action of a general anæsthetic is to be found in post-anæsthetic aciduria we have yet to explain the fact that whereas any general anæsthetic may induce aciduria yet the fatalities have occurred after chloroform alone. It is striking to find that a child who has been anæsthetised for two minutes with ethyl chloride may present, so far as the duration of post-anæsthetic aciduria is concerned, a history identical with that of a child who has inhaled chloroform for 40 minutes. If the nature and dose of the anæsthetic are without influence on the post-anæsthetic aciduria one is almost tempted to suggest that the state of narcosis is a more important factor than the action of the drug. Whatever the explanation may be, we appear to have as the result of surgical anæsthesia some disturbance of metabolism of which the outward sign is aciduria. Only in the rarest instances does that disturbance result in death and in those instances chloroform is the anæsthetic used. It has been suggested that the fatal results are due to the damaging action of chloroform on the excretory mechanisms and on the kidneys in particular. There is some clinical and experimental basis for such a view but there are obvious difficulties in the way of regarding it as a complete and satisfactory explanation. It is, we think, more likely that an explanation of the unenviable prominence of chloroform in the published cases will be found in some toxic action peculiar to the drug. It may be that such toxic action is exerted indirectly through the intermediary of the central nervous system or it may be that the chloroform is of itself a direct tissue poison. The changes induced are probably too deep-seated to admit of any accurate definition in the present state of our knowledge. In this connexion Wells has suggested that certain of the cells are poisoned to such an extent that their synthetic activities cease whilst proteolysis goes on unhindered. The oxidases suffer most and are inhibited or destroyed by the chloroform. Presumably the liver is most affected since it is the site of the most active autolytic and oxidative processes of the body. The greater susceptibility of children to the delayed action of chloroform finds a ready explanation on this hypothesis since in them the autolytic power of the liver is greatest.

Finally, how are we to explain that the administrations are many but the fatalities few? Idiosyncrasy as an explanation is obvious but unsatisfying. The most pregnant suggestion is that of Guthrie who believes that there has existed in the fatal cases some predisposing condition on which the administration of chloroform has heaped the last straw. We would suggest that in rickets there may be found one of such predisposing conditions. Both our fatal cases were markedly rickety children. We have notes of three cases which recovered after symptoms suggesting the delayed action of chloroform and in each of these three cases osteotomies had been undertaken for the correction of rickety deformities. Further, there occur other cases in the literature in which the patient was suffering from the symptoms or sequelæ of rickets. It may, of course, be objected that rickets supplies a very large proportion of the operative work of any children's hospital and that in many cases submitted to operation on account of deformities the initial disease has long since ceased. In any child the subject of active rickets we have, however, some condition of toxæmia in which grave alterations are induced in the tissue cells, and it is reasonable to suggest that in these cases the administration of chloroform may by the direct and peculiar action of the drug initiate some change fraught with grave danger and with the possibility of death.

Bibliography.—Subsequently to the publication of the important paper by Stiles and Macdonald (Report of the Society for the Study of Disease in Children, 1904), which contains a very full bibliography, the following articles have appeared:—Brackett, Stone, and Low: Aciduria associated with Death after Anæsthesia, Boston Medical and Surgical Journal, July, 1904. Bayard Holmes: Appendicitis, p. 214, 1904. Dreschfeld and Moore: Acid Intoxication sui Generis, Medical Chronicle, 1904. Müller: Ueber Zettmetamorphose, Archiv für Klinische Chirurgie, 1905. Offergeld: Experimenteller Beitrag zur Toxischen Wirkung des Chloroforms auf die Nieren, Archiv für Klinische Chirurgie, 1905. Carmichael and Beattie: Delayed Chloroform Poisoning, THE LANCET, August 12th, 1905, p. 437. Guthrie: On Aciduria (Acetonuria) as the Cause of Deaths following the Administration of Chloroform and Ether, THE LANCET, August 26th, 1905, p. 583. Bevan and Favill: Acid Intoxication, Journal of the American Medical Association, 1905. Kelly: Acid Intoxication, Annals of Surgery, 1905. Sick: Hæmatemesis in Appendicitis, Deutsche Medizinal Zeitung, 1905. Morse: Acid Auto-intoxication in Infancy and Childhood, Archives of Pediatrics, 1905. Bajardi: Sur l'Elimination du Chloroforme de l'Estomac et sa Relation avec les Vomissements dans les Anesthésies, abstracted in Les Archives Générales de Médecine, 1906. Wells: Delayed Chloroform Poisoning and Allied Conditions, Journal of the American Medical Association, 1906. Tuffier, Mauté, et Auburtin: La Mort Tardive par le Chloroforme, La Presse Médicale, 1906. Auburtin: Les Effets Tardifs du Chloroforme, abstracted in La Presse Médicale, 1906.

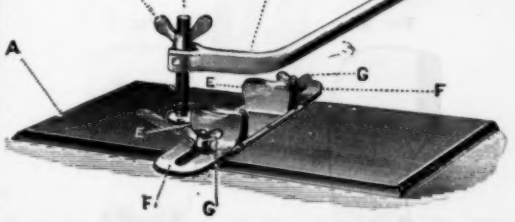
SOME CONTRIBUTIONS TO THE ORTHOPÆDIC ARMAMENTARIUM.[1]

BY E. MUIRHEAD LITTLE, F.R.C.S. ENG.,
CORRESPONDING MEMBER OF THE AMERICAN ORTHOPÆDIC ASSOCIATION.

THE surgeon (χειρουργός) the man who uses his hands, thus distinguished from the physician who only advises, must have tools. The orthopædic surgeon is probably more a man of his hands than any other specialist, except the dental surgeon, and he uses a greater variety of tools. It is with diffidence that I offer a few additions to the orthopædic tool-chest, but as they have been of some use to me personally I venture to hope that they may prove useful to my colleagues of the American Orthopædic Association.

There are many osteoclasts at present in use by various surgeons, but it seemed to me that a strong, simple, and rapid bone-breaker was still a desideratum. These qualities I have endeavoured to secure in the osteoclast shown in Fig. 1 which is made on the simple plan of the common

FIG. 1.



bread or tobacco cutter. It consists of a stout wooden board A to which are fixed the fulcrum pillar and the two counter-pressure blocks. The pressure-bar and lever and handle B are all one piece of steel one metre long (measured in a straight line from the pivot to the end of the handle). The part which presses on the limb is 18 centimetres long and of similar section to the pressure-bar of Grattan's osteoclast. This lever is bifurcate at one end and between the two prongs of the fork is pivoted—gimbal fashion—a collar (not visible in the diagram) consisting of a piece of steel tube 6 centimetres long and of 2 centimetres internal diameter. The pillar C, which forms the fulcrum of the lever, is of steel 19 millimetres in diameter and 22 centimetres high. It is very firmly fixed to the board by a plate and bolts and nuts. It has a screw thread of square section throughout its length. Over this the pivoted collar of the lever slides easily; and is kept from rising by a strong, easily running, butterfly nut (D). Resistance or counter pressure is offered by the two steel blocks EE. The upper surface of each of these is convex in its short diameter and concave in its long diameter. They measure 23 millimetres by 90 millimetres and are 5 centimetres high in the middle and 6 centimetres near each end. Each of them has a long foot or flange FF, in which is a slot 10 centimetres long for a fixation screw and butterfly nut G. By this means the position of the blocks can be adjusted through a range of 17 centimetres, and they can be fixed at any points between 3 centimetres and 20 centimetres apart.

When the osteoclast is to be used the baseboard is clamped to the top of the operating table by means of two strong screw cramps at the side next to the fulcrum. The relative amount of separation of the blocks having been determined on and their bases fixed by the nuts, the lever is

[1] A paper read at the meeting of the American Orthopædic Association at Toronto, August, 1906.

either removed or swung to one side. The limb to be operated on is then placed on the blocks and carefully adjusted by the operator, and then committed to the care of an assistant who must keep it in the required position. The lever is then brought into place and the butterfly nut D on the pillar is spun down to the collar while the handle of the lever is held up. The pressure-bar being then gently brought down on the exact spot chosen (and this can be accurately done by means of the horizontal angular movement round the pillar), a sharp pull on the handle of the lever breaks the bone.

When the fulcrum is lower than the blocks there is obviously a tendency to push the limb away from the fulcrum and on to the raised corners of the blocks. This can be easily counteracted by the assistant, who must with both hands keep it firmly on the hollows of the blocks. Ever since witnessing the work of the late Dr. Grattan at Cork I have shared his opinion that a polished metal surface in direct contact with the skin is far less likely to do damage to the latter than rubber or other pads, which instead of sliding harmlessly over the epidermis are apt to drag it away and so produce abrasions. I have therefore followed his example and adopted a polished steel pressure-bar of ogival section. I believe that this machine is powerful enough to do all that is likely to be wanted. A force of one hundredweight, which any man can easily exert by hanging on to the lever, will produce a pressure equal to a weight of nearly half a ton over the middle of the blocks. The osteoclast is also useful instead of a wrench for the correction of club feet of all kinds. For this purpose a metal heel plate is added to prevent the foot from slipping off the blocks. All the metal parts of the apparatus are nickel-plated for the prevention of rust in the moist and corrosive atmosphere of London, but this is, of course, not essential.

Figs. 2, 3, and 4 represent a simple appliance which is of

FIG. 2.

FIG. 3.

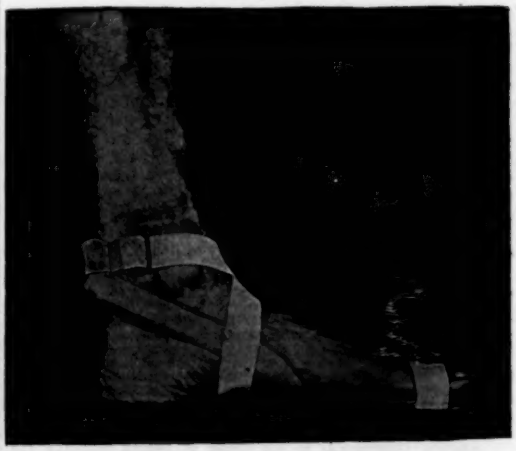
FIG. 4.

use in the treatment of club-feet with gypsum. During the process of application of plaster it is difficult to maintain the best position, owing to the constant shifting of the hands of the assistant, which is unavoidable; and it is not easy to keep up a good position by hanging on to the end of a piece of adhesive plaster. These plates are made of sheet brass, bent up as shown at the heel and inner side and fitted with two pairs of staples. The upper and lower surfaces of one of them are shown in Figs. 2 and 3. The ends of the lever (Fig. 4) are passed through the staples and secured by a wire retaining pin, which is run through holes in the two

FIG. 5.

FIG. 6.

FIG. 7.



heel staples and in the prongs of the lever. The foot having been covered with a thin bandage, the plate is applied to the sole and firmly held by a few turns of gypsum bandage around the instep and the heel. The assistant then grasps

the ring-end of the lever and firmly rotates, flexes, abducts, adducts, or extends as the case may require, while the gypsum bandage is completed. The assistant must remember that the lever gives him great power and he must not too forcibly over-correct or the splint may be unbearable. One end of the retaining pin is left uncovered by the bandages so that it may be pulled out when the plaster has set. These pins, of course, are often lost, but a nurse can always supply a hairpin, one leg of which answers the

FIG. 8.

purpose perfectly. As soon as the gypsum has set the pin at the heel is withdrawn and the lever is then gently pulled out, leaving the plate embedded in gypsum. The plates can be used over and over again and as the first cost is very small a stock of various sizes for both feet can be kept in the hospital instrument store, or one can be made to order by any workman provided with such common materials as sheet brass, iron or steel wire, and copper rivets. I have used these sole plates regularly during the last two years at the

FIG. 9.

Royal National Orthopædic Hospital in London and have never known of any sore or other bad result following their use.

Figs. 5, 6, and 7 represent a bunion spring for the ambulant treatment of hallux valgus when for any reason the radical cure by operation is not practicable. I venture to claim for it these advantages: (1) it leaves the tender inner surface of the prominent joint free from pressure; (2) it allows free movements of extension and flexion; (3) it takes up little room in the boot; (4) it can be worn night and day; and last and most important, it keeps up a gentle but steady correcting pressure. It consists of a thin and flat steel or phosphor-bronze spring which is twisted in a somewhat spiral form, extending from the outer side of the heel to the last phalanx of the great toe, where it is bent up to form a toe-post. Opposite and underneath the meta-tarso-phalangeal joint it has a flat hinge. The whole is covered with leather.

Fig. 8 shows an adjustable spring retractor or dummy assistant, intended to hold the toes apart during small operations, dressings, or examinations, and so save the services of an assistant. It resembles in design a pair of spring calipers or dividers. The bow is curved on the edge so as to rest on the dorsum of the foot. The shaped toe-plates are pivoted so as to adjust themselves to the position of the toes against which they rest and the range of action of the spring is controlled by the nut, which spins easily on the cross pin.

Fig. 9 shows an universal foot splint for the treatment of deformities of that part after operations such as arthrodesis. The only point which calls for notice is the very strong ball-and-socket joint under the sole plate which allows it to be placed and kept in whatever position may be most desirable. This object is attained by using a large ball and clamping it with a ring after the manner of certain reading desks which are made for invalids. Fig. 10

FIG. 10.

shows the under surface of the sole plate. This latter is made of wood, as is the leg plate, and to these the metal fittings are fastened with screws so that they can be easily removed and fixed to different sized plates. One set of fittings is thus available for a number of different cases, a point of some importance in a hospital.

All of the above-described appliances have been made for me by Mr. A. E. Evans, of 11, Osnaburgh-street, London, N.W., who has very efficiently carried out my instructions.

Duchess-street, W.

A CASE OF CHRONIC INTUSSUSCEPTION WITH COMPLETE INVERSION OF THE VERMIFORM APPENDIX.

BY J. W. STRUTHERS, M.B., CH.B. EDIN., F.R.C.S. EDIN.,

ASSISTANT SURGEON TO THE LEITH HOSPITAL.

A FEW cases of intussusception associated with complete or partial inversion of the vermiform appendix have been recorded, but the combination is so rare that it appears worth while to add a report of the following case to the existing records.

The patient, a poorly-developed girl, five years old, began to suffer from severe attacks of abdominal pain and diarrhœa two months before her admission to Leith Hospital on August 10th, 1906. The attacks of pain came on about once in 24 hours, often at night, and were so severe as to make the child scream out and roll about in agony. No special note was taken by the mother of the character of the motions and no blood was noticed in them at the beginning of the illness. There was no vomiting until two

days before admission to hospital. The patient was taken to the medical out-patient department of the hospital soon after her illness began and was treated for summer diarrhœa, nothing abnormal being detected in the abdomen. The treatment relieved but did not cure the condition, for the diarrhœa continued, and five weeks after the illness began streaks of blood were noticed in the motions. A week later the mother found that something was protruding from the anus after the passage of a motion. She returned the protrusion without difficulty but it came down frequently after its first appearance. Two days before the child's admission to hospital, in the eighth week of her illness, she suddenly became worse. She began to vomit and vomited repeatedly until admission. The abdominal pain became much more severe and the child's strength failed rapidly. The protrusion at the anus appeared to increase in size and though it could still be returned it came down again soon after reduction and was almost continuously outside the anus for two days before admission. The child was again taken to the hospital and was at once admitted.

On examination the patient was found to be a pale, emaciated, sickly-looking child, apparently much reduced in strength. Her temperature was normal, the respirations were 24, and the pulse-rate was 108 per minute. The abdomen was prominent but not markedly distended. The muscular wall was not rigid and palpation revealed a firm, elongated mass, easily felt, occupying the left lumbar and iliac regions and passing down into the pelvis. Protruding from the anus was a purplish-coloured mass, obviously of intestine coiled on itself. At its apparent apex was a dimple and close to this was a polypoid projection about one and a half inches long. The nature of this, which ultimately proved to be the appendix turned inside out, was not at first recognised.

Without further delay the child was taken to the operating theatre and anæsthetised, the C.E. mixture dropped on an open mask being used. The bladder was emptied by catheter and the prolapsed intestine was returned by an assistant. The abdomen was then opened through the left rectus muscle near the middle line. The descending colon at once presented moderately distended by the intussusceptum but not apparently otherwise affected. Two fingers of one hand were passed into the pelvis and reached below the apex of the intussusceptum in the rectum without difficulty. By moderate pressure the intussusceptum was gradually made to travel back along the descending, transverse, and ascending colon, which were successively brought out at the wound, an unusually long ascending and descending mesocolon making this easy. No adhesions had formed between the opposing peritoneal surfaces, and the wall of the intestine was only slightly thickened in the region of the cæcum and ascending colon. Reduction was consequently easy and when the ileo-cæcal junction and the cæcum finally appeared it was thought that reduction was complete. On inspecting the cæcum, however, it was found that there was apparently no appendix and the site where it should have arisen was marked by a dimple in the cæcal wall. Palpation then revealed the fact that the appendix was projecting into the cæcum. After one or two ineffectual attempts to express it, the cæcum was packed round with gauze, opened by a longitudinal incision on its antero-external aspect, and the appendix at once found projecting into its interior and completely inverted. It was amputated at the base, the edges of the mucous membrane at its origin were united by a silk stitch, and the incision in the cæcum was closed by a double row of stitches in the usual way. The abdominal wound was then closed, no drainage being employed. The child's condition at the end of the operation appeared little worse than at the beginning. There was no vomiting after the operation and the child made an excellent recovery. She was discharged from hospital in good health five weeks after admission.

The appendix was hardened and then examined by making a longitudinal and cross sections through it. It was one and a half inches long and half an inch across at the base. The distal two-thirds of the mucous membrane were replaced by a layer of whitish adherent lymph; the proximal one-third showed some punctate hæmorrhages and general congestion. On section it was found that the peritoneal tube which must have been present when inversion took place was obliterated, except for a few millimetres at the base of the appendix. The process of inversion had evidently been followed by exudation and organisation and the condition had existed long enough to allow of organisation being well advanced. Microscopical examination of the appendix near its tip and base revealed nothing of special note except that the main vessels were not thrombosed. The mucous membrane towards the tip had apparently necrosed and been replaced by the layer of lymph noted above. Otherwise the appendix was in a good state of preservation and showed only general congestion with a few small hæmorrhages. The line of the peritoneal coat could not be detected and the central part of each section was occupied by young connective tissue round the main vessels of the appendix.

As the child was not under observation from the beginning of the illness it is impossible to say exactly how long the intussusception had existed. Its apex appeared outside the anus a fortnight before the operation, so it must have been present for two weeks, while it may have been the sole cause of the illness and been present for eight weeks. In all probability the process began with the inversion of the appendix, for it is difficult to believe that the appendix could have been turned outside in after being drawn in between the ileum and the cæcum in an ordinary ileo-cæcal invagination. The inverted appendix probably acted as a foreign body and set up violent peristalsis in the cæcum and so led to the invagination of the ileo-cæcal valve. What conditions, anatomical or pathological, would lead to an inversion of the appendix it is difficult to imagine, and one must in the meantime be content merely to record the fact of such an occurrence. In common with other recorded cases of chronic intussusception, an unusually long mesocolon was present in this case, so that the entire colon could be brought out without difficulty through a wound to the left of the middle-line. Owing to the presence of this long mesocolon the intussusceptum was able to pass along the large intestine and project at the anus without strangulation occurring and fortunately without sufficient congestion and irritation being set up to cause the formation of adhesions, except between the opposing peritoneal surfaces of the appendix. It might be suggested that in these circumstances a trial of reduction by inflation or injection would have been successful in relieving the condition. Had injection successfully reduced the ileo-cæcal invagination, however, the inverted appendix must have remained *in statu quo* and would have almost certainly led to a recurrence.

In an almost similar case recorded by Pitts the intussusceptum prolapsed from the anus a fortnight before operation, and reduction, apparently successful, was carried out by manipulation. The child remained well for some days and was discharged from hospital, only to be readmitted a few days later with a recurrence of the condition, except that the intussusceptum did not again prolapse from the anus. At the operation the appendix was found completely inverted into the cæcum and was removed after opening the cæcum, exactly as in the case under consideration. The child recovered. In two of the other four cases which I have found recorded, one by McKidd in 1858, the other by McGraw in 1897, the inversion of the appendix appears to have been complete. In the remaining cases, reported by Wright and Waterhouse, the inversion was partial and affected the proximal part of the appendix only. In four out of six cases, therefore, the inversion was complete, and in two it was incomplete; three of the patients with complete inversion were operated on and all recovered; the fourth case, reported by McKidd in 1858, was of course not operated on. Of the cases with partial inversion one recovered and one died.

Bibliography.—McKidd: Edinburgh Medical Journal, 1858. McGraw: Brit. Med. Jour., 1897. Pitts: THE LANCET, June 12th, 1897, p. 1602. Wright: Brit. Med. Jour., 1897. Waterhouse: Transactions of the Pathological Society of London, 1898.

Edinburgh.

ON THE INCREASED MORTALITY IN ENGLAND AND WALES FROM KIDNEY DISEASES, WITH SPECIAL REFERENCE TO BORON PRESERVATIVES AS A FACTOR THEREIN.

BY B. FARADAY GILES, M.D. DURH.

As chairman of the commission now sitting in America on the Pure Food Bills Dr. Wiley is stated to have said: "There is a low death-rate in England, but the low rate is in pulmonary diseases, &c., while there has been an increase of 30 per cent. in kidney diseases, &c., ... *due no doubt* to the use of colouring matter and preservatives." Again, Dr. Richard Jones in his presidential address on Food and Food Preservatives, says: "I have always stated that it has been proved that

about 80 per cent. of the preservatives, particularly boron compounds, were excreted by the kidneys. This will *probably* account for the gradual increase in the death-rate from acute nephritis during the past 20 years."[1] (The italics in the quotation are mine.) This latter deduction is directly at variance with the conclusion of Professor Virchow after self-administration of large doses of borax daily for three months[2]: "He being himself surprised at the immediate beneficial effect of the treatment."

The vagueness and complexity of the latter part of Dr. Wiley's statement and the *post ergo propter* deduction he arrives at make it a difficult question to discuss. Without going into the very difficult and complex question of the nomenclature of disease, which has been revised decennially during the period under consideration, the question whether many deaths returned as from nephritis should not have been returned as from scarlet fever or one of the many other causes of nephritis, and the result of more accurate diagnosis which in itself would tend to increase the number of deaths under this heading, let us take the statement of the Registrar-General: "Throughout the last 20 years there has been an almost steady rise in the mortality from nephritis, acute as well as chronic, amounting to 42 per cent. in the 20 years." For this purpose I have tabulated the figures, year by year, from the annual reports of the Registrar-General for nephritis, Bright's disease, and other kidney diseases (undefined), showing the mortality from these causes during the last 30 years. From this table it will at once be seen that, whereas the undefined returns are only about one-third of what they were at the beginning of the period, both those from nephritis and Bright's disease have steadily increased.

Table showing Mortality from Kidney Diseases in England and Wales from 1875 to 1884 and from 1885 to 1894 and from 1895 to 1904.

Year.	Death-rate.	Total mortality from kidney disease.		
		Nephritis.	Bright's disease.	Other kidney diseases undefined.
1875	22·8	978	3,841	1,628
1876	21·0	985	4,100	1,385
1877	20·4	890	4,763	1,204
1878	21·7	952	4,801	1,024
1879	20·9	1,153	5,062	1,048
1880	20·5	1,116	4,842	986
1881	18·9	1,093	5,103	911
1882	19·6	1,103	5,489	993
1883	19·5	1,221	6,200	1,422
1884	19·6	1,177	6,297	1,431
—	Totals ...	10,668	50,498	12,032
1885	19·7	1,226	6,538	1,263
1886	19·3	1,193	6,839	1,190
1887	18·8	1,231	6,848	1,332
1888	17·8	1,443	6,941	1,105
1889	17·9	1,376	7,089	1,009
1890	19·5	1,626	7,319	985
1891	20·2	1,800	7,529	1,073
1892	19·0	1,861	7,278	932
1893	19·2	1,912	7,590	742
1894	16·6	1,902	7,531	647
—	Totals ...	15,570	71,482	10,278
1895	18·7	2,060	8,251	678
1896	17·1	2,089	8,023	603
1897	17·4	2,266	8,234	638
1898	17·6	2,303	8,537	699
1899	18·3	2,454	9,203	623
1900	18·2	2,607	9,860	347
1901	16·9	3,035	9,676	481
1902	16·2	2,991	9,221	577
1903	15·4	2,951	9,468	585
1904	—	—	—	—
—	Totals* ...	22,756	80,473	5,131

* Nine years only.

[1] Brit. Med. Jour., August 18th, p. 351.

[2] Virchow: Ueber Nephritis Arthritica, Berliner Klinische Wochenschrift, No. 1, 1884.

We have now to consider the more precise statement of Dr. Jones, that "boron preservatives will probably account for the gradual increase in the death-rate from acute nephritis." This statement appears to me to be illogical and unsupported by any evidence. I am not aware that adverse criticism has arisen as to the use of the older preservatives—common salt, vinegar, saltpetre, &c.; but because boron preservatives are excreted by the kidneys it is alleged that they (probably) account for the increase in the death-rate from nephritis. It is certain that the 30 years covered by the above table embrace the whole period during which boron preservatives have been in anything like general use. Now the Registrar-General's returns for the decades 1861–70 and 1871–80 under the heading of nephritis and Bright's disease, annual mortality per 1,000,000, England and Wales, are as follows:—

1861-70	1871-80
112	199

showing an even *greater increased mortality* from these diseases *before boron preservatives were in general use*. Again, another table showing annual mortality (diseases of urinary system) per 1,000,000 in England and Wales is as follows:—

1861-65	1866-70	1871-75	1876-80
246·4	287	326	375

and shows that during the same period urinary diseases in general had risen proportionately from 100 to 152.

Whatever the cause of the undisputed increase in the mortality from kidney diseases it must be sought for in some other factor than the use of boron preservatives. I submit, in conclusion, that no evidence of injurious effects from the properly regulated use of boron compounds has ever been produced.

In further corroboration of the above facts let us take the case of Denmark. During the last 15 years the Danish Government has forbidden the use of any preservative in the perishable foods intended for home consumption. If the increased mortality from kidney diseases in England is due to the use of boron preservatives the mortality from these diseases in Denmark should have lessened, or at least remained stationary, during this period. The official tables of the Danish Government of deaths in Denmark and their causes contain the following eloquent figures:—

Number of Deaths per annum in Denmark from Kidney Diseases during the 15 Years 1890–1904.

Year.	Nephritis albuminosa.	
	Copenhagen.	Provincial towns.
1890-94	358	702
1895-99	522	692
1900	140	181
1901	138	196
1902	148	184
1903	167	164
1904	142	193
Average for the Five Years—per annum.		
1890-94	72	140
1895-99	104	138
1900-04	147	183

Thus while the increased mortality in England from kidney disease for the period named works out at 27 per cent., that of Denmark for the same period shows a proportion of 104 per cent., proving conclusively that boron preservatives have nothing whatever to do with such increased mortality.

Hornsey, N.

HORTICULTURAL EXHIBITION AT MANNHEIM.—The Board of Agriculture and Fisheries announces that a horticultural exhibition will be held at Mannheim in the Grand Duchy of Baden from May to October, 1907. Exhibits from this country will be admitted to the fruit, vegetable, orchid, and cactus shows. Applications for information should be addressed to the office of the exhibition, Friedrichsplatz 14, Mannheim, Germany. A copy of the provisional programme can be seen at the offices of the Board, 4, Whitehall-place, London, S.W.

A Mirror
OF
HOSPITAL PRACTICE,
BRITISH AND FOREIGN.

Nulla autem est alia pro certo noscendi via, nisi quamplurimas et morborum et dissectionum historias, tum aliorum tum proprias collectas habere, et inter se comparare.—MORGAGNI *De Sed. et Caus. Morb.*, lib. iv., Proœmium.

BEDFORD COUNTY HOSPITAL.

A CASE OF RUPTURE OF THE URETER; DRAINAGE; RECOVERY.

(Under the care of Mr. W. GIFFORD NASH.)

A MAN, aged 44 years, was admitted to the Bedford County Hospital on July 11th last, complaining of abdominal pain. He was dull and stupid and there was great difficulty in obtaining any history from him, but the following history of his case was afterwards given by Dr. C. H. Nicholson of Silsoe, Bedfordshire, under whose care he had been. "The man had never been robust but did not remember having any serious illness—in fact, he had not been on his club for 15 years previously to February, 1906. On Feb. 22nd he suffered from pain in his lower abdomen, slight vomiting, and obstinate constipation. There was some bleeding from the rectum which was too tender to admit of digital examination. He returned to work on April 14th relieved of pain and not passing blood. On May 16th he had a severe attack of vomiting and pain in the left hypochondrium. His temperature was 100° F. These attacks continued at intervals of about a week until June 22nd. On July 5th he had an attack of a similar nature on the right side and on July 8th he first noticed a swelling on this side which came with pain and subsided when the pain was relieved. The attacks of pain were attributed to renal colic."

On admission nothing could be felt in the abdomen. The right flank was tender. Per rectum nothing abnormal was detected. His temperature was 100°. On July 14th a swelling was felt on the right side of the abdomen outside the cæcum. This rapidly increased during the two following days, so that at the date of operation—July 16th—it extended from the right costal margin downwards across the iliac fossa as far as the external abdominal ring.

An incision was made into the swelling with its centre two inches internal to the anterior superior spine of the ilium. A large cavity was found containing about 30 ounces of clear urinous fluid. At the upper part of the cavity the right kidney of about normal size could be felt lying loose, as if dissected out by the fluid. The cæcum was displaced inwards. The cavity was mopped dry and then it was seen that clear fluid kept dribbling in from the position of the ureter on a level with the crest of the ilium. The fluid was ejected in spurts at intervals of a few seconds, just as urine enters the bladder from the ureter. It was evident that this fluid was escaping from the ureter about three or four inches below the pelvis of the kidney. At the time of operation very little was known of the patient's history, so that no search was made for calculus. Mr. Gifford Nash did not feel justified in removing a healthy-looking kidney, so he decided to drain the cavity. The urine ceased to flow from the wound on July 20th and on the 24th the tube was left out. On August 12th the patient was out of bed and left the hospital on the 22nd. For four days after the operation the urine passed naturally, averaged about 30 ounces, for the next week 40 ounces, and after that about 50 ounces. Dr. Nicholson reported on Oct. 24th that the man was getting about and was quite free from any pain or swelling.

Remarks by Mr. GIFFORD NASH.—Subcutaneous injuries of the ureter are very rare. Morris[1] gives a list of 24 cases described as "rupture of the ureter," and of these says that only 12 can be considered injuries of the ureter proper, and of the 12 only three were actually proved to be rupture of the ureter. In most of the cases the patient died or underwent nephrectomy. In six of the cases a retroperitoneal collection of fluid appeared.

The ideal treatment is immediate suture or anastomosis of the ureter (Morris). Other methods are puncture of the cyst and lumbar incision. Puncture of the retroperitoneal cyst has given uncertain results. Stanley's case was punctured six times without effecting a cure. In a case under the care of Mr. Paul Swain which I recorded in THE LANCET,[2] one aspiration cured a large retroperitoneal extravasation of urine due to injury, but this may have been a rupture of the kidney or its pelvis.

In the case under notice there was an absence of a history of injury. The cause might have been ulceration of a calculus through the wall of the ureter and the previous history rather pointed to this. No sign of a stone was seen. Other causes which suggest themselves are rupture of a dilated ureter above a stricture or perforation of an ulcer, but if either of these was the cause one would not have expected such rapid healing to take place. The cause, I fear, must remain unexplained.

With reference to the treatment adopted, the incision was an extensive one so as freely to expose the cæcum and the kidney. The site of oozing from the ureter was easily seen. I did not think it possible to sew up the opening in the ureter and before performing nephrectomy I determined to give the fistula a chance of granulating up. By adopting this method Morris's surmise came true, "that if the ureter were not completely torn across and free drainage were provided he would expect cicatrisation of the wound and re-establishment of the ureteral channel to take place."

[1] Surgical Diseases of the Kidney and Ureter, vol. ii., p. 330.

Medical Societies.

MEDICAL SOCIETY OF LONDON.

Exhibition of Cases.

A MEETING of this society was held on Nov. 12th, Mr. C. A. BALLANCE, the President, being in the chair.

Dr. E. G. GRAHAM LITTLE exhibited four cases of Urticaria Pigmentosa in children. The disease had started in early life, as usual in this complaint. It was characterised by an appearance of successive crops of urticaria, followed by pigmentation; the former stage might be so evanescent as to escape notice. The condition was rare, occurring only about once in 4000 instances of skin disease. Sketches of the histological features were exhibited. In many cases the eruption subsided as adolescence became established. No treatment had much influence.

Mr. C. GORDON WATSON exhibited a case of Ileo-Sigmoidostomy after Excision of Carcinoma of the Sigmoid Flexure, the colotomy wound being still open, in a man, aged 33 years. The chief question raised was how best to close the wound.—Mr. CUTHBERT S. WALLACE suggested division of the large bowel below the wound and anastomosing this with part of the bowel above.—Mr. A. E. J. BARKER endorsed this suggestion.—The PRESIDENT remarked that when portions of the bowel were thrown out of use they atrophied, disappeared, and could not be identified. He took a more favourable view than previous speakers of the prognosis in this case.

Mr. EDRED M. CORNER showed a case of Multiple Swellings on the Bones of One Lower Extremity in a girl, aged seven years. The swellings existed on the upper and lower ends of the right femur and tibia, the upper end of the right fibula, the right ramus of the os pubis, and possibly on the right ilium. There was nothing to be found in the rest of the skeleton. Attention was drawn to the extraordinary distribution of the tumours—namely, in one limb and the corresponding half of the limb girdle. These swellings had interfered with the growth of the bones in which they were situated, so that the right leg was two and a half inches shorter than the left, causing the girl to fall about. Otherwise the patient was perfectly well. In skiagrams the swelling presented a vacuolated appearance. When shown at the Clinical Society on Oct. 26th the case was regarded as possibly syphilitic in origin on account of the history and the depressed bridge of the nose. But since then sections had been cut of part of one of the swellings which revealed them to be enchondromata undergoing irregular ossification in the form of a network. There were at least seven well-marked tumours in the one limb.—The PRESIDENT discussed the origin of such tumours and thought they might quite well be termed enchondromata.

[2] THE LANCET, Sept. 12th, 1891, p. 612.

Mr. PERCY W. G. SARGENT exhibited two cases of Symmetrical Myeloid Sarcomata. One was a male, aged 14 years, in whom enlargement of both sides of the mandible had been noticed for two years. When admitted to St. Thomas's Hospital in August, 1904, there were hard swellings on each side in the region of the bicuspid teeth, the second lower bicuspids being absent. No enlarged glands were felt. Operation was performed on the left side; the tumour was not encapsuled. Microscopically it proved to be a giant-celled sarcoma with much fibrous tissue. The sister of the last patient, a year or two younger, was also shown, with an exactly similar condition of the lower jaw. In this case there were some enlarged lymphatic glands.

Mr. BARKER exhibited a case of Lymphangiectasis of the Left Thigh in a man, aged 22 years. The condition had existed for six or seven years. At certain periods of the day, e.g., after food, the contents of the swollen lymphatics were chyle-like. This seemed to indicate some communication with the lacteals. When the swelling of the leg became intolerable the patient pricked the swollen lymphatics and let out the fluid. Discussing the possible operative measures for relief Mr. Barker deprecated anastomosis between the enlarged lymphatics and a vein as not being free from the dangers of thrombosis and embolism.

Dr. F. J. POYNTON exhibited a case of Enlargement of the Lower Limb in a child, aged seven years. The child's left leg was said to have been always larger than the right, there being at the present time from three to four inches difference in the circumference of the two limbs. The skin of the affected part had a peculiar consistency and, together with the subcutaneous tissues, appeared thickened and felt resistant. There was no pitting on pressure. The bones of the affected side could be felt to be bigger than those of the right side and this difference was confirmed by x rays. The thickening of the skin and subcutaneous tissues could be appreciated over the lower abdominal, gluteal, and lumbar regions of the left side up to about the level of the umbilicus. Dr. Poynton suggested the possibility of his case resembling the case just shown by Mr. Barker in an earlier stage.—Dr. A. F. VOELCKER believed there was some enlargement of the bones on the affected side; but it could not be regarded as a case of true gigantism.

Dr. F. PARKES WEBER exhibited a case of Multiple Fibrous Nodules about each Olecranon with a Rheumatoid Condition of One Foot, in a man, aged 37 years. The nodules were not specially tender to pressure, but of a tough fibrous-like consistence, situated in the neighbourhood of the bursæ. On one of the fingers there was also a small fibrous nodule. Two years ago the patient developed rheumatism which affected his hands and feet, and since that time he has never been quite free from active symptoms. The nodules appeared about one year ago. Dr. Weber, in commenting on this case, expressed the view that there was no hard-and-fast line which distinguished many conditions clinically termed rheumatoid arthritis from conditions termed chronic or subacute rheumatism, or even from conditions supposed to be gouty.

Dr. WEBER also exhibited a case of Myelopathic Splenomegalic Polycythæmia.

Dr. J. F. H. BROADBENT exhibited an Early Case of Paralysis Agitans without Tremor in a female patient, aged 54 years. For upwards of a year she had noticed increasing difficulty in writing, sewing, and finer movements of the right hand on account of stiffness and weakness. She also stated that the right leg was weaker than the left. The fingers of the right hand were held in an "interosseal" position. There was no tremor anywhere. There were no alteration in voice and no marked loss of emotional expression.—Dr. J. WALTER CARR expressed some doubt as to the validity of the diagnosis.—Dr. BROADBENT replied.

Dr. R. A. YOUNG exhibited a case of Multiple Neuritis following Enteritis. The patient was a boy who at the age of two years and nine months was in a hospital at Malta from June 15th to August 5th with acute enteritis followed by a febrile illness associated with symmetrical weakness and wasting of the muscles of both legs and to a less degree of both arms. When seen at the Middlesex Hospital at the age of three and a half years there was a partial reaction of degeneration in the muscles of the legs, which were cold and blue. The reflexes in the lower extremities were lost and the child could not walk without assistance. No particular group of muscles had specially suffered and recovery was taking place symmetrically.

Mr. WALLACE showed a case of Myeloid Sarcoma of the Upper End of the Right Fibula in a female child, aged five years. The history was only of 14 days' duration. The growth lay in the diaphysis under the epiphyseal cartilage and evenly expanded the bone. The case seemed, Mr. Wallace thought, to be a suitable one for a local excision; the upper end of the cut fibula might be fastened to the tibia.

CLINICAL SOCIETY OF LONDON.

Treatment of Fractures.—Multiple Strictures of the Ileum treated by Operation.—Rotatory Subluxation of the Spine.—Congenital Deformity of the Cervical Spine treated by Operation.

A MEETING of this society was held on Nov. 9th, Mr. H. H. CLUTTON, the President, being in the chair.

Dr. E. DIVER read a paper on the Treatment of Fractures in which difficulty was experienced in bringing the ends of the bone together. The suggested treatment applied to those cases in which good apposition of the two ends was not attainable. Efforts should be directed to gain contact merely of some portion of the broken ends of the bone, regardless of the contour of the limb until callus was beginning to fix the fracture. Subsequently the normal outline of the limb could be restored by movements alternating with periods of rest much as in a case of tenotomy. The callus as it hardened would yield to the surgeon's manipulations until the limb was as far as possible in symmetry with the other. In some cases the effect of muscular action would aid in maintaining the fragments in good position. The principle of the treatment was similar to that governing the treatment of clubfoot and at first sight seemed to promise results similarly good. An opportunity for trying the treatment had not hitherto presented itself.

Mr. CHARTERS J. SYMONDS read the notes of a case of Multiple Strictures of the Small Intestine, probably of Tuberculous Origin. The patient was a man, aged 43 years, who was admitted into Guy's Hospital in September, 1899. Since a boy he had been subject to abdominal pain. Since the age of 20 years he had had one or two attacks of pain each year, generally at night. He was first seen on August 30th, 1899, and he said that the attacks had been more frequent during the last three years and the pain had been almost constant for the last three months. During the last week he had been frequently sick, bringing up much brown fluid. On examination the abdomen was swollen, coils of small gut could be seen, there was loud gurgling, and a marked sound of fluid passing a narrow orifice was heard at a point below, and to the left of, the umbilicus. On Sept. 5th, 1899, the abdomen was opened and resection with end-to-end anastomosis was carried out. The portion removed was 15 inches long and showed a thickened and dilated length of bowel with a stricture at either end. The dilated portion was of the size and shape of a small stomach and about 12 inches in length. The patient had had no return of symptoms and was at present in perfect health. Reference was made to a similar case in a child and another in a male adult patient.—Mr. F. J. STEWARD referred to a similar case in a man, aged 37 years, admitted to Guy's Hospital. Abdominal pain was the leading symptom. There was nothing to suggest the cause of the stricture in this case.—Dr. W. H. B. BROOK asked whether there were any signs of tubercle in the lungs or elsewhere.—Mr. A. E. J. BARKER suggested that the stricture might have been the result of typhoid fever. Another case he referred to had been the result of strangulated hernia. He advocated the freer removal of the intestine in the operation of resection, cutting always into thoroughly sound tissue.

Mr. EDRED M. CORNER read a paper upon Rotatory Subluxation of the Atlas. He drew attention to those cases in which, as the result of violence such as a sudden twist, the head became fixed in a rotated position. This he concluded was the result of the locking together of the forwardly displaced side of the atlas on the axis by muscular action. The position and fixation of the atlas could be discovered clinically by the position of its transverse processes and by the loss of certain movements of the head and neck. Cases were quoted and diagrams were exhibited in support of these statements. Skiagrams were shown from a case exhibited at the society on Oct. 20th, 1905. A skiagram was mainly of use to demonstrate the absence of complicating injuries, such as a fracture of the odontoid process or of the anterior arch of the atlas. If such additional fractures were excluded an anæsthetic should be slowly and carefully administered.

If muscular relaxation were induced the head would probably roll back into its proper position, and when the patient recovered from the anæsthetic full movements of the head would be restored. These accidents had usually hitherto been attributed to the displacement of part of the splenius muscle or to the slipping of one of the deep tendons over the transverse process of a vertebra.—In reply to Mr. STEWARD, Mr. CORNER said that this subluxation could occur without rupture of the ligaments because these were so lax in the atlo-axoid joint.

Mr. J. JACKSON CLARKE read the notes of a case of Congenital Deformity of the Cervical Spine treated by operation. The patient, a boy, aged four years, from birth had had the head fixed so that the chin was close to the sternum and there was no movement in the cervical spine, alike of flexion, extension, and rotation. The general appearance recalled cases of anencephaly but the boy's mind appeared to be normal. Operative treatment followed by massage gave the boy a short neck with all the natural movements. Skiagrams showed extensive abnormalities in the form of the bones in the upper dorsal and cervical regions, and a cervical rib was present on each side. Mr. Clarke was not aware of any similar case on record in which operation had been performed but he had met with untreated cases in adults.—The PRESIDENT congratulated Mr. Clarke upon the success of his operative measures and agreed with the suggestion that there might be an anterior spina bifida (or spinal deficiency) in the cervical region in such cases.

OBSTETRICAL SOCIETY OF LONDON.

Myomectomy during Pregnancy.—External Version.—Exhibition of Specimens.

A MEETING of this society was held on Nov. 7th, Dr. W. R. DAKIN, the President, being in the chair.

Mr. ALBAN DORAN communicated a short paper on Myomectomy during Pregnancy, and Labour at Term in an elderly primipara, with notes on similar cases. A woman, aged 35 years, underwent myomectomy, a sessile subserous fibroid occupying the left fornix being removed. The operation was performed in the fourth month of the patient's first pregnancy. The patient was delivered at term of a living child who was reared. The labour was rather long owing to conditions not associated with the operation. Reference was made to some other cases of labour in elderly primiparæ after myomectomy reported in 1906. The operation did not appear to prejudice unfavourably the subsequent course of the pregnancy or to increase the perils of labour; in short, elderly primiparæ bore it as well as did younger subjects.—The PRESIDENT asked Mr. Doran what the indications for operation had been in the case just described.—Dr. LEWERS referred to a case in which he had performed myomectomy at the fifth month of pregnancy for a subperitoneal fibroid of the size of a Tangerine orange. The pregnancy was not interrupted and the patient was delivered normally at full term. He had operated under the impression that the tumour was an ovarian dermoid.—Mr. DORAN, in reply, observed that he had stated in his communication the reason why he had decided to operate. The diagnosis was, as in Dr. Lewers's case, not quite certain. He did not approve of the removal during pregnancy of fibroids of the fundus or of any part of the uterus above the pelvic brim save in exceptional circumstances.

Dr. W. RIVERS POLLOCK read a paper on External Version, its Present Position in Obstetrics, with a suggestion of a new method of performing it. He reviewed the present position of the operation of external version in England, America, and on the continent, and then dealt with the question as to the proper time for performing it and also considered in detail the difficulties to be overcome in order to make the operation more generally useful. He described fundal external version, the way to perform it, and its advantages and disadvantages as compared with bipolar and internal version. The essential point, according to Dr. Pollock, in performing the operation was to suspend the patient by the feet approximately or actually in the vertical position. This led to the disengagement of the breech from the pelvic brim. The breech could be prevented from descending again by pressure of the hand. The patient could then be placed on her back and the remainder of the operation completed in the usual way.—Dr. F. H. CHAMPNEYS said that all would be glad to have new methods of dislodging the fœtus from the pelvis in the performance of external version. The method adopted with success by Dr. Pollock seemed to him to require some explanation and also testing against other methods. As regards the first, it struck him that the position of the legs of the patient was not essential; it was the position of the trunk and especially of the pelvis that mattered. In the erect position the brim of the pelvis was inclined to the horizon at an angle of some 60°. In the inverted position it would be still inclined at that angle to the horizon. In the genu-pectoral position, however, if properly arranged, the brim of the pelvis pointed vertically downwards. He wanted to know, in these circumstances, why the inverted position (suspension by the legs) was superior to the genu-pectoral position. In the second place he would like to know whether it was, as a fact, superior to that position.—Dr. G. E. HERMAN asked Dr. Pollock in how many of his cases the Trendelenburg position alone had not been enough and he had had to have the patients raised by the heels. It appeared to him that in the Trendelenburg position the long axis of the uterus was horizontal and therefore he should not have expected it to accomplish what Dr. Pollock wished to bring about.—Dr. HERBERT R. SPENCER said that the subject of external cephalic version of breech cases had interested him for many years. He had published a paper on the subject five years ago in which he recommended the operation towards the end of pregnancy and especially at seven and a half months. The operation at that period was usually easy and could be performed sometimes in a few seconds with the patient in the dorsal position. After this date, especially in primiparæ, the operation became increasingly difficult and was usually impossible at term or during labour. The raising of the pelvis certainly seemed from the remarkable series of cases in the table to facilitate the operation of external version, but he noted that none of the patients were at term and he asked Dr. Pollock whether he believed the same results were obtainable at term or in labour, as it was then that the real difficulty occurred. He did not think that Dr. Pollock's method could be said to be altogether new. Elevation of the pelvis and legs and cephalic version during labour were recommended by Hippocrates, and in the sixteenth century shaking or rolling movements to turn the child while the patient was in this position were recommended by various authorities.—Dr. H. WILLIAMSON said that he had employed the method in a modified form. A few weeks ago he saw a primipara near term and the breech was presenting. He attempted the operation of external version with the patient in the dorsal decubitus; the attempt failed because the presenting part could not be dislodged from the pelvis. He then placed the patient in the Trendelenburg position over the back of a chair; in this position version was performed easily. Labour ensued a fortnight later and the child presented by the vertex.—Dr. C. J. NEPEAN LONGRIDGE said that he had performed external version in numerous breech cases in primigravidæ, and had employed the Trendelenburg position on three occasions. In cases where the liquor amnii had drained away he asked whether the position advocated by Dr. Pollock would not allow of artificial liquor amnii being poured into the uterus and so facilitate the version.—Dr. POLLOCK replied and said that he had tried the genu-pectoral position in one of the cases, the last of the series, as had been suggested to him by Dr. Champneys, but the lower pole of the child did not, in that attitude, move out of the pelvis. Moreover, it was most difficult in that position to get at the child to push it towards the fundus. He was interested to hear how old the method was of shifting the mother's attitude in the hope of changing the position of the child. In the 15 cases which he had reported there was no tendency for the child to revert to a breech presentation.

The following specimens were shown:—

Dr. C. HUBERT ROBERTS: Cornual Pregnancy at full time removed by Abdominal Section, and a specimen of Cancer of the Uterus.

Dr. H. RUSSELL ANDREWS: Necrobiotic Fibroid removed after Cæsarean Section at full term.

EDINBURGH MEDICO-CHIRURGICAL SOCIETY.

Exhibition of Cases and Specimens.—Plea for the Study of the Intermedio-lateral Tract in the Spinal Cord.

THE first ordinary meeting of this society was held on Nov. 7th, Dr. J. O. AFFLECK, the President, being in the chair.

Dr. T. W. DEWAR showed a case of Lupus Vulgaris of 13 years' duration cured in 40 days. The disease occurred in a woman, aged 29 years, in whose family history there was no tuberculous affection. The disease commenced at the age of 15 years and affected the left cheek, also the right ear and the skin at the angle of the jaw. The diseased parts were cauterised when she was 21 years of age but with no improvement. During 1904 she was treated with the Finsen lamp for many months but was not greatly benefited. In August, 1906, the disease was worse than it had ever been previously and she suffered from dyspeptic symptoms. Treatment was then adopted for the lupus as follows. The scabs were removed without causing bleeding; a 5 per cent. solution of cocaine was applied by means of cotton-wool swabs; then a 10-volume solution of peroxide of hydrogen was applied in like manner, and further treatment was kept up by the intravenous injections of an ethereal solution of iodoform. Koch's tuberculin gave rise to a marked reaction. The disease had entirely healed by Sept. 18th.

Dr. W. ALLAN JAMIESON exhibited a case of Darier's Disease and showed microscopic specimens. The patient was a woman, aged 32 years, healthy though not robust. There was nothing to remark on in her own or her family history. She was seen in August by Dr. Norman Walker, to whose kindness was due the opportunity of showing her, and was for a time under Dr. Jamieson's treatment in September. The disease began three and a half years since on the leg and behind the ears. There were when seen firmly adherent, yellowish, horny crusts on the trunk, limbs, and abdomen. These, when forcibly removed, left a red, rough, dry or but slightly moist surface. The earliest lesions were visible at the margins and consisted of papules, truncated cones, or minute craters with their cones filled with a whitish soft mass concealed by the crust. There was a little itching. The disease was steadily progressive. Sections showed the characteristic "round bodies" in the thickened horny epidermis. Exposure to the x rays was being tried, arguing from the way in which the tubercles of molluscum contagiosum become absorbed under their influence. The same "round bodies" were present in molluscum contagiosum in numbers, so that the keratinous dystrophy was probably of a parallel nature.

Dr. BYROM BRAMWELL showed a man suffering from Disseminated Sclerosis which resembled tabes dorsalis. On cursory examination his gait very closely resembled the ataxic gait of locomotor ataxia. The patient was a married man, aged 42 years, with no history of syphilis. Lightning pains were absent, the pupils reacted briskly, the knee-jerks were exaggerated, ankle clonus was present, and double Baginsky's signs; nystagmus was marked as was also volitional tremor. Examination of the cerebro-spinal fluid showed absence of leucocytosis. The case was doubtless one of disseminated sclerosis. There was evidently a large sclerotic patch in the lower part of the cord giving rise to the ataxic gait. Within recent months the knee-jerks, ankle clonus, and Baginsky's signs were much less exaggerated.

Dr. GEORGE MACKAY demonstrated two cases of Hereditary Optic Atrophy. The disease tended to attack the male sex and to pass by the female sex. It was markedly hereditary and in one of the cases shown had been transmitted through six generations. It usually appeared in early adult life and might effect one or both eyes. The disease might undergo amelioration, but even then vision was very defective and as a rule total blindness ensued. There was central scotoma together with curtailment of the whole field of vision. The eyes appeared normal and no other nervous symptoms were present. The pupils reacted to light and also on convergence. Ophthalmoscopic examination might only reveal a slight pallor of the disc but as the disease advanced atrophy was evident. The cause was unknown and treatment was futile. One patient was aged 29 years and the disease had also affected his elder brother, his first cousin, his uncle, and some grand-uncles on the mother's side. None of his female relatives had suffered from this disease. The younger patient was 22 years of age and the disease had been noticed since February of this year. He exhibited partial optic atrophy with central scotoma. Three of his uncles had lost their vision at the same age. Hot-air baths, mercury, and strychnine had been tried but with no improvement.

Dr. EDWIN BRAMWELL demonstrated a case of Juvenile General Paralysis. The patient, a boy, aged 16 years, exhibited in a very striking manner the majority of the characteristic symptoms and signs of general paralysis as it occurred in adolescence. The case differed from the majority of those recorded in that the patient presented none of the stigmata of congenital syphilis, while no indication of that disease was obtained from the family history. Cytological examination of the cerebro-spinal fluid showed a very pronounced lymphocytosis. In many fields under a 400 magnification there were from 120 to 150 lymphocytes. The cerebro spinal lymphocytosis was in itself extremely suggestive of a syphilitic affection of the nervous system.

Mr. HAROLD J. STILES narrated the case of a boy on whom Enterectomy had been performed for Perforated Typhoid Ulcer and Diffuse Peritonitis. The child was taken to the hospital suffering from a perforated appendix, it was supposed. On opening the abdomen the appendix was found to be normal but the pelvis was full of sero-pus, as were also the spaces between the coils of the small intestine. Mr. Stiles diagnosed a perforated typhoid ulcer and on examining the ulcer the bowel tore widely. Five or six inches of the bowel were resected and an artificial anus was left. The child made an excellent recovery and the artificial anus was excised. End-to-end anastomosis of the bowel was not thought advisable at the time of operation.

Mr. STILES also showed a man exhibiting well-marked Multiple Neuro-Fibromata (Molluscum Fibrosum). The fibrous tissue grew in connexion with the sheath of the nerves and formed tumours situated over the whole of the body but mostly on the trunk. They varied in size from that of a pin's head to that of a small walnut. The skin of the palms of the hands and soles of the feet were free from tumours (one small one was present on the ball of the left thumb). There was a very large diffuse neuro-fibromatous tumour growing from the left lumbar region which had been excised.

Mr. STILES likewise showed a man before operation. He thought the case very suitable for grafting and anastomosing the spinal accessory nerve on to the facial nerve. The case occurred in a young man who fractured the base of his skull in a bicycle accident. He made a good recovery, but complete facial paralysis on the left side supervened. The facial nerve had been torn through during its passage through the aqueduct of Fallopius. There was diminution of the sense of taste on the left side of the tongue anteriorly. Mr. Stiles did not think the case would become cured spontaneously, as bony outgrowth would form in the canal and compress the nerve. The man was a blacksmith by trade, but Mr. Stiles did not think that partial paralysis of the left trapezius muscle would handicap him much in his work.

Dr. T. D. LUKE exhibited Harvey Hilliard's new Chloroform Regulating Inhaler. He recalled that Lord Lister, when on the staff of the Royal Infirmary of Edinburgh, investigated the strength of the vapour as inhaled by the patient with the towel and bottle arrangement. He found that the proportion of chloroform vapour varied from 4 to 5 per cent. Various apparatus had been invented for the purpose of administering chloroform in vapour of definite and known percentage—e.g., Junker's, the disadvantage of this lying in the pump. Dr. Embley of Melbourne showed that in dogs the vapour of chloroform inspired varied between 0·8 and 2·5 per cent. in order to produce anæsthesia. A vapour of more than 2 per cent. strength exerted a dangerous influence on the vagus nerves. Mr. Vernon Harcourt's apparatus was complicated and the numerous valves were very liable to get out of order. Any agitation of the bottle was liable to increase to a dangerous extent the strength of the chlorform vapour. The most practically useful regulating inhaler yet brought before the notice of the profession was that of Mr. Harvey Hilliard and was very similar to that of Ricard which had found great acceptance in France. Hilliard's apparatus was capable of giving all percentages of chloroform from zero to 4·5 per cent. No limit was put to the percentage as being *safe* for the closest and most constant observation of the patient by the chloroformist was the only *safe* guide. The facepiece was connected to the reservoir by means of a flexible aluminium tube 16 inches in length. Six minutes were found to be ample to induce anæsthesia and if the

percentage of chloroform was not too quickly increased patients passed quietly into the anæsthetic sleep without struggling. Only one-third of the quantity of chloroform was consumed as compared with the drop-bottle. The whole of the chloroform used was inhaled by the patient. Dr. Luke had until quite recently always used the drop-bottle but he considered this apparatus a valuable one and a marked advance in the technique of chloroform anæsthesia. It was valuable for teaching purposes as showing how small a quantity of chloroform was required to produce anæsthesia. If 25 minims of chloroform were actually introduced into the blood anæsthesia of a profound character was produced. It was not a closed inhaler but in reality an open one. In the ordinary open method of administering chloroform more than one-half passed into the air of the room unaltered. By Hilliard's inhaler an unvarying percentage of chloroform was administered, while in the open method by the towel at one moment the vapour might be of high density and the next of very low density. Dr. Luke believed that it was in connexion with the more accurate dosage of chloroform that advances in the art of anæsthesia would take place.

Mr. H. ALEXIS THOMSON demonstrated Roosevelt's clamp for gastro-intestinal anastomosis.

Dr. ALEXANDER BRUCE and Dr. J. H. HARVEY PIRIE communicated a paper entitled "A Plea for the Study of the Intermedio-lateral Tract in the Spinal Cord" and exhibited microscopic specimens. They pointed out some of the more important of the steps in the development of our knowledge of this cell column since its first description by Lockhart Clarke in 1851 and they showed that the limits of the tract were now determined to be the middle of the eighth cervical segment above and the lower part of the second lumbar or perhaps the upper part of the third lumbar below. The cell column was not a continuous one, but was divided into a number of groups, the form and size of which appeared to be more or less characteristic of each spinal segment. They detailed the steps which went to prove that the cell column was the spinal centre for the efferent fine medullated nerves of the sympathetic system and showed that where the outflow of these was greatest the numbers of the cells also reached a maximum. The number of cells on each side was not far short of 100,000. The functions of the various roots of the sympathetic, and presumably therefore of the various segments of the intermedio-lateral cell column in the cord, were then detailed. Two cases were described showing the application of the knowledge of the anatomy and pathology to the elucidation of symptoms. In one case, in which there had been in an adult an acute atrophic paralysis of the lower limbs associated with a temporary anæsthesia below the level of the sixth rib, and with a permanent loss of sweating in the lower limbs and in the trunk below an irregular line about two inches above Poupart's ligament, a post-mortem examination showed that there were congestion and hæmorrhage from the vessels of the anterior cornua with marked degeneration of the motor cells throughout the whole of the lumbo-sacral enlargement, and also in the lower dorsal segments. In addition to this, however, and corresponding closely in its distribution to the levels indicated by Langley as the centre for the sweating fibres for the foot of the dog, there were found congestion of the vessels and hæmorrhage into the intermedio-lateral tract, with marked degeneration of its cells—a degeneration indicated by loss of chromatin granules and displacement of the nucleus to the periphery of the cell. This change in the intermedio-lateral tract extended from about its lower end in the second dorsal segment to the level of the ninth dorsal segment. It seemed reasonable to connect this change with the loss of sweating referred to. In a second case of exophthalmic goitre of eleven months' standing, which had been under the care of Dr. G. L. Gulland, and in which the patient had died after symptoms of hyperthyroidism, a lesion was found in the intermedio-lateral tract extending from the second dorsal segment well down into the fourth segment, or perhaps slightly lower. The lesion consisted in marked degeneration of the cells of the intermedio-lateral tract, some of these showing a distinct swelling, with a finely granular appearance replacing the Nissl's granules of the cell substance. In some the nucleus had also disappeared. In many others the change had proceeded further and was indicated by a lateral position of the nucleus, a disappearance of the chromatin granules throughout the cell, with the exception of a narrow ring at the periphery, and by the frequent presence of vacuoles. In addition to these changes some of the arterioles leading into the lateral horn and others within the grey matter showed a peculiar hyaline degeneration of the middle cord. This degeneration was present mainly in the arterioles derived from the arteries that passed towards the tip of the lateral horn, but also in some of those in the posterior column reaching the base of the horn. Related to a number of these vessels there were minute hæmorrhages in the neighbourhood of the intermedio-lateral tract. The hæmorrhages were probably terminal in occurrence, and the vascular change was more widely distributed than the alteration in the nerve cells. Dr. Bruce and Dr. Pirie suggested that if there was a spinal lesion in connexion with exophthalmic goitre it should be sought for in the intermedio-lateral tract in its upper part, and not in the cervical enlargement or elsewhere. They also suggested the importance of a study of the tract in other diseases of the sympathetic system.—The communication was discussed by Dr. BYROM BRAMWELL and Professor D. J. CUNNINGHAM.

The following gentlemen were elected office-bearers for the ensuing session of 1906–07:—President: Dr. James Ormiston Affleck. Vice-Presidents: Professor W. S. Greenfield, Dr. Byrom Bramwell, and Dr. George Hunter. Councillors: Professor J. Chiene, Mr. H. Alexis Thomson, Dr. R. A. Fleming, Dr. F. D. Boyd, Professor H. Harvey Littlejohn, Dr. W. G. Aitchison Robertson, Dr. G. Keppie Paterson, and Mr. William Guy. Treasurer: Dr. J. W. Dowden. Secretaries: Dr. G. Lovell Gulland and Dr. David Wallace. Editor of Transactions: Dr. William Craig.

BRITISH GYNÆCOLOGICAL SOCIETY.—A meeting of this society was held on Nov. 8th, Mr. F. B. Jessett being in the chair.—Mr. J. Furneaux Jordan showed a specimen of Fibroma of the Ovary and read notes of the case. The patient had been under observation for three years and was 59 years of age. She complained of abdominal distension, dyspnœa, and a large umbilical hernia. She had had 16 children and the menopause occurred nine years previously. For a long time she had been a heavy drinker. She was a tall and stout woman, with marked ascites, her waist measuring 51 inches at the umbilicus. A hard tumour was felt in the lower part of the abdomen. The pulse was quick and feeble. After a few days' rest in hospital the tumour was removed through an abdominal incision and the hernia was repaired. It proved to be a fibroma of the right ovary with a capsule of ovarian stroma. Convalescence was uneventful.—Mr. Jordan also showed a Soft Myoma of the Uterus which had been removed by supravaginal hysterectomy from a patient aged 48 years, who had complained of metrorrhagia for 15 months and who for the last six months had to remain in bed. For nine months she had noticed a lump in the abdomen. She had been married for 29 years. There were 12 children, the youngest being ten years of age. Severe shock followed the operation, but at the end of 24 hours a distinct improvement began and continued.—Dr. J. Hutchinson Swanton showed a specimen of Ovarian Cystoma in which thyroid tissue was present. It had been removed from a patient, aged 42 years, who complained of a sudden attack of abdominal pain which seized her while in bed three weeks previously. Menstruation appeared ten days afterwards and lasted for seven days. The tumour was made up of several cysts with a solid central mass of tissue presenting a thyroid structure. The patient was convalescent on the twentieth day after the operation.—Mr. Charles Ryall showed a specimen of Hypertrophied Clitoris and Labia removed from a syphilitic patient, aged 55 years. Her family were all healthy. The labia on one side were much enlarged and the clitoris hypertrophied, pendulous, and club-shaped. The perineum was indurated and contained numerous sinuses. There was also a stricture of the rectum. This growth was noticed 11 years previously but lately had increased in size and owing to friction had become irritable and sensitive. The growth was removed and on examination it proved to be a granuloma of syphilitic origin.—Dr. S. Jervois Aarons read a paper on the Medical Treatment of Uterine Hæmorrhage. He said that he did not advocate this form alone to the exclusion of operative treatment. There were, however, numerous conditions which would yield readily to medical treatment. A list of 93 cases was presented which were treated medically. Three of these were successfully treated by rectal injections of gelatin after all other treatment had failed. One case of hæmophilia responded to calcium salts after ergot, hydrastin, and

adrenalin had been tried. Among the drugs employed were ergot (either as liquid extract or ergotin hypodermically administered to obtain uterine contraction), hydrastin, cannabin, tannate, and cotarnine hydrochloride. Calcium was used either as lactate or chloride in doses of 30 grains three times daily and taken during the menstrual period. Neutral cotarnine phthalate was especially useful in hæmorrhage at the climacteric as well as in that occurring during pregnancy. Gelatin was employed after the beneficial results observed in the treatment of aneurysm. About nine ounces of sterilised liquefied gelatin were slowly injected through an ordinary irrigator into the rectum three times a day. Two days of this treatment were found to be sufficient.—In the discussion which followed Mr. Jordan, Dr. H. M. Macnaughton-Jones, Dr. Heywood Smith, and others took part.

BRITISH BALNEOLOGICAL AND CLIMATOLOGICAL SOCIETY.—A meeting of this society was held on Oct. 31st, Dr. G. W. Hamilton Cumming (Torquay), the President, being in the chair.—The President introduced the president-elect, Mr. H. Shirley Jones (Droitwich), who delivered an address entitled "The Art of Medicine in Ancient Egypt." Mr. Shirley Jones said the earliest work on medicine in existence was probably that known as the Ebers Papyrus, which dated back to the sixteenth century B.C. The bare mention of earlier works was found—e.g., a work on anatomy by Athothis, the second King of Egypt, 4700 B.C., and again a mention of surgery as a distinct art in a code of laws issued by Hammurabi, King of Babylon in 2300 B.C., but of these two there was now no trace. The Ebers Papyrus consisted of short descriptions of diseases referring to the abdomen and their compilation suggested that they referred to those diseases described by Herodotus as "secret and internal maladies." Herodotus told them that the Egyptian physicians were not allowed to practise any but their own peculiar branch. Some were oculists, some dentists, others devoted their attention to diseases of the head, others to secret internal maladies, and so forth. Magic played a constant, but somewhat secondary, part in all treatment of disease. It differed from that of other nations in this respect, that whilst other nations regarded the use of herbs as useless unless rendered effective by the power of magic, the Egyptians considered the use of herbs as an essential adjunct to their magic. A curious feature of their magic lay in the fact that the magicians identified themselves with the gods and claimed their assistance as companions and as equals. The seven diseases mentioned relate to indigestion, worms, heart and stomach troubles, constipation, swellings (glandular and others), and suppurating wounds, and loss of strength, and loss of consciousness, and also probably loss of blood. This is followed by numerous prescriptions for their relief, for the most part composed of herbs, but also in several instances inorganic compounds were mentioned. At the end of the papyrus was a long description of the anatomy of the heart and its action.—A vote of thanks to Mr. Shirley Jones for the address was proposed by Dr. A. P. Luff and seconded by Dr. F. M. Sandwith who remarked that he was sure he might safely speak for all the audience in congratulating their new President on his most interesting address and on the skill with which he had condensed so much of the medical history of Egypt into one short hour. The address should send those of them already interested in medical history back to their studies with renewed vigour. In the anatomical museum of the Cairo Medical School could now be seen some evidences of pre-historic surgery, and in the Museum of Antiquities there, close to the entrance door there stood the stela of the tomb of the earliest of known physicians. Many of the habits of the ancient Egyptians referred to by the President were still to be met with among the modern inhabitants. Superstition and magic were not unknown and there were certain days in the week on which it was considered unlucky to start a journey. Though it was quite true that hydrotherapy was not mentioned at the time of the Ebers Papyrus sun baths and sand baths were well known and the advantages of a dry climate were often mentioned.

LEEDS AND WEST RIDING MEDICO-CHIRURGICAL SOCIETY.—A meeting of this society was held on Nov. 2nd, Dr. A. H. Bampton being in the chair.—Dr. T. Churton read a paper entitled "Three Cases of Cerebral Tumour, with Remarks on the Diagnosis of Localisation and on the Proposed Operation for the Cure of Optic Neuritis (Horsley)." He said that in a recent address Sir Victor Horsley had urged the desirability of trephining in every case of cerebral tumour which did not recover under drug treatment continued for three months, and this for the following reasons: (1) the operation could do no harm; (2) the tumour might be removeable; (3) if not removeable or not found the tumour might disappear spontaneously after operation; and (4) the associated optic neuritis would be arrested even if no further good could be done. For this and other reasons mentioned it had become necessary to localise brain lesions with greater accuracy. Hospital patients on admission often presented signs of pressure on the surface (stupor, incontinence of urine, &c.) and also at the base (tremor, eye movements, &c.). In order to determine the site of the original or prime lesion it was necessary to discover which set of lesions appeared first. To do this was sometimes easy, sometimes very hard. In the first of the three cases the patient was a girl, aged seven years, who in June, 1904, showed marked cortical signs such as irritability, the use of bad language, passing urine and fæces into the bed, and inability to sit up in bed. She had also basal signs such as intention tremors in all the limbs, very wide in range; spontaneous nystagmus, &c. Smell and vision were lost. The first observed sign was tremor when the patient was excited, gradually increasing in range in 1903. Later there were headache and fatigue after slight exertion, but there were no vomiting and no optic neuritis. A basal tumour causing hydrocephalus was diagnosed. The necropsy showed that a narrow growth occupied the interpeduncular space and the third ventricle, and that the lateral ventricles were dilated by fluid. Other cases were mentioned and discussion upon Sir Victor Horsley's recommendations was invited.—Mr. E. Ward quoted some cases that had been relieved by operation and suggested the removal of a strip of skull all round (as had been practised in microcephaly).—Dr. A. Bronner emphasised the risks attached to cerebral surgery—œdema, hæmorrhage, and cerebritis—and said that not all cases of optic neuritis were due to pressure, but some were inflammatory.—The President, Dr. E. F. Trevelyan, Dr. A. Christy Wilson, and Mr. Michael A. Teale also discussed the paper.—Dr. M. B. Ray read a paper entitled "Notes on a Case of Obstructed Labour due to a Sarcoma of the Pelvis."—Specimens and cases were also shown by Dr. J. B. Hellier, Mr. W. Thompson, Dr. Churton, Mr. B. G. A. Moynihan, Dr. Bronner, Mr. H. Littlewood, Dr. W. H. Maxwell Telling, and others.

GLASGOW MEDICO-CHIRURGICAL SOCIETY.—A meeting of this society was held on Nov. 2nd, Dr. J. Lindsay Steven, the President, being in the chair.—Dr. W. K. Hunter showed a man with Complete Ankylosis of the Vertebral Column. A slight rotatory movement of the upper part of the column was the only one possible. X ray photographs showed a line of bone in the intervertebral discs. There was no stiffness of any of the other joints.—Dr. A. G. Faulds showed a number of Bodies removed from the Bladders of Female Patients. Symptoms of cystitis brought each case under medical observation. In one case in which a threepenny-piece and in another where a pea had been pushed into the bladder, a very acute cystitis developed within 24 hours. A third patient, who was a girl, aged 13 years, had suffered from vaginitis and very intractable cystitis for many years. Tuberculous disease of the bladder was diagnosed, but on cystoscopic examination a slate pencil partially crusted over with salts was removed, after which the symptoms disappeared. In two cases calculi were extracted which on section showed a nucleus, in one case consisting of a good-sized plain gold ring, in the other of a small bell from a child's rattle. These bodies must have been tolerated for a long period. Another case was that of a girl from whose knees more than 13 needles were removed, and on one occasion after micturition about one and a half inches of the sharp end of a hat-pin were found in the slipper. In another case a piece of thick copper wire was removed from the bladder of a young girl who occasionally passed urine of a distinctly blue colour. All the patients were highly hysterical. The great variation in bladder tolerance in the various cases was striking.—Dr. W. W. Christie read notes of a case of Suppurating Periodontal Cyst and showed the patient, and Dr. J. Walker Downie described the operation which he had performed. The cyst had occupied the greater part of the maxillary antrum and in front had been in communication with the socket of the central incisor.—Dr. J. G. Tomkinson read a paper on Ringworm and its Present Treatment, with illustrative cultures. He said that the difficulty of treatment by antiparasitics was due to the

fragility of the affected hairs rendering complete epilation almost impossible, and to the fact that no antiseptics penetrated more than one millimetre into the hair follicle and so were quite unable to reach the root of the follicle situated four millimetres below the skin. The depilatory action of the x rays was complete if pushed far enough but if pushed too far was followed by permanent baldness. Regulation by time was faulty but by the use of Sabouraud's pastilles a safe exposure could be made. The scalp was then dressed daily with an alcoholic solution of iodine (10 per cent. of iodine dissolved in alcohol of 80 per cent. strength). The hairs fell out 14 days afterwards and on the eighteenth day daily soap washings were started. The spot remained bald for two months.

NOTTINGHAM MEDICO-CHIRURGICAL SOCIETY.—At a meeting of this society held on Nov. 7th Mr. E. Powell, the President, gave an address on the Prevention of Insanity. He said that the ratio of certified cases to the general population had risen steadily from 1 in 536 fifty years ago to 1 in 319 ten years ago, and even to 1 in 283 at the beginning of the present year. The explanation lay partly in a diminished death-rate and partly in an increasing accumulation of incurable cases in asylums. Many of such cases could quite well have remained at home under ordinary rural conditions but the continuous growth of urban areas drove them into asylums. Such increase was almost wholly confined to the pauper classes. Dealing with preventable causes, he said that the most important of all was hereditary predisposition, which could be clearly traced in at least 22 per cent. of the cases admitted. The second most important cause was the abuse of alcohol. Amongst women the amount of insanity due to drink was steadily increasing and in towns like Nottingham, where female labour was largely employed, the percentage was higher than elsewhere. Stimulants must be prescribed to neurotic subjects only with the greatest caution. The third most important preventable cause was syphilis, which played such a leading part in the production of general paralysis. As compared with 30 years ago the cases admitted to asylums to-day numbered fewer acute maniacs but a larger proportion of melancholic and senile cases. Adolescent insanity was increasing in connexion with overstrain. It was, therefore, to be regretted that the usual educational curriculum was so little elastic with respect to the special needs of any children who were slightly defective, especially when so much compulsion was applied to education. In the insanity of middle-aged men business worries bore an important part and premonitory symptoms, such as loss of sleep and appetite, general irritability, and a tendency to worry over trifles, should never be neglected.

BRIGHTON AND SUSSEX MEDICO-CHIRURGICAL SOCIETY.—A meeting of this society was held on Nov. 1st, Dr. W. C. Chaffey, the President, being in the chair.—Dr. C. F. Bailey showed an old man with Paralysis Agitans, in whom the symptom of subjective heat was very marked.—Dr. A. W. Williams brought up a boy with Urticaria Factitia or Dermography; anything written on the skin with the finger remained as raised wheals for some hours. The pathology was said to be arterial hyperplasia in the subcutaneous tissue, increased nuclear mitoses in the prickle cell layer, and possibly also spasm of the efferent veins.—Dr. Walter Broadbent showed two babies with Congenital Malformation of the Heart, one a case of morbus cœruleus with no cardiac murmurs, probably with patent foramen ovale; the other with a continuous murmur with systolic and diastolic increase, and also a loud pulmonary second sound; there was possibly a patent ductus arteriosus, with some narrowing of the pulmonary artery beyond the valves.—Dr. D. G. Hall showed the Brain from the case of cerebellar disease shown at the last meeting. Mr. A. H. Buck had trephined and had not found the tumour, which was a tough fibro-sarcoma below the front of the right lobe of the cerebellum, destroying the eighth and part of the fifth and seventh nerves.—Dr. F. G. Bushnell showed a series of Mosquitoes caught on the south coast of England during the summer, which included several forms of anopheles. He also showed microscopic preparations of malarial parasites.—Mr. G. Morgan read notes of, and showed specimens from, a case of Mastoid Disease in which he had cleared out the mastoid and opened and drained an extra-dural abscess without relieving the patient. Post mortem a thick-walled abscess was also found in the temporo-sphenoidal lobe.—Dr. E. Hobhouse showed a photograph of a peculiar case of Tetany in a baby, the body being markedly bent to the right.—Mr. W. D. Calvert read a paper on Shakespeare and Medicine.

WINDSOR AND DISTRICT MEDICAL SOCIETY.—A meeting of this society was held on Oct. 31st, Mr. W. Arnold Thomson, the Vice-President, being in the chair.—Mr. J. O. Skevington exhibited a Uterus which he had lately removed and which contained in its interior a large sessile submucous fibroid. The patient made an excellent recovery.—Dr. Francis H. Hawkins read a paper entitled "Cases of Ascites in which the Effusion of Fluid has Subsided after Tapping." He commenced by giving a history of the operation of paracentesis in ascites from the time of Celsus in the first century, and then related some cases that had been under his care in which paracentesis had proved beneficial, and he ended by discussing the causes of ascites and the class of case in which they might reasonably expect, if not a complete recovery, at least relief for many years from paracentesis.—Dr. Edward Casey related the case of a man, aged 55 years, whose illness began with hæmatemesis, abdominal pain, and albuminuria, ascites being early developed. The albumin soon disappeared but the ascites increased, and paracentesis was performed in March, 1900, and after that 25 times in 16 months. The average quantity of fluid drawn off was about two gallons. After August, 1901, the ascites did not recur and the man was, when Dr. Casey saw him a few weeks ago, still able to work at his trade. Another case mentioned by Dr. Casey was that of a hard drinker who was tapped for ascites due, as was supposed, to cirrhosis twice within a few weeks and who had no return of it until his death from hæmatemesis seven years afterwards.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.—A clinical meeting of this society was held on Nov. 2nd, Dr. Leonard P. Mark, the President, being in the chair. The following cases were shown:—Dr. A. E. Saunders: Two cases of Congenital Œdema of the Legs.—Dr. A. Baldwin: (1) A case of Dislocation of the Hip reduced by Open Operation; and (2) a man, aged 31 years, on whom he had performed Excision of the Knee for Tuberculous Disease of long standing.—Mr. C. R. B. Keetley: Two women on whom he had performed the operation of Appendicostomy with satisfactory results.—Mr. J. G. Pardoe: (1) Malignant Tumour of the Neck; and (2) Abdominal Tumour.—Mr. Cecil H. Leaf: Cases of Tumour of the Breast.—Dr. Seymour Taylor: A case of Locomotor Ataxia in a woman.—Dr. J. S. Wallace: A boy, aged seven years, suffering from Lymphadenoma of the Glands of the Neck.—Dr. Donald J. Armour: A case of Tumour of the Scalp.—Dr. Phineas S. Abraham: A case of Pityriasis Rubra.

Reviews and Notices of Books.

Modern Clinical Medicine: Diseases of Metabolism and of the Blood; Animal Parasites; Toxicology. Edited by RICHARD C. CABOT, M.D., Instructor in Clinical Medicine in the Medical School of Harvard University. An authorised translation from *Die Deutsche Klinik*, under the general editorial supervision of JULIUS L. SALINGER, M.D. Illustrated. London: Sidney Appleton. 1906. Pp. 649. Price 21*s*.

WE are informed in the introduction of this volume that the object of the work is to present a picture of diseases which were formerly designated as of "obscure causation" and to discuss their treatment. Several articles appear in the book on subjects indicated by its title and each contribution is written by a physician whose previous investigations are well known.

The first communication is by Dr. W. Wientrand (Wiesbaden) on the Quantitative Analysis of Disturbances of Metabolism in the Clinic. He refers to the advances which have been made during the past decade in clinical chemistry and discusses at length the methods which have been adopted for the estimation of the caloric requirement of the body. We agree with him that although by work in the laboratory combined with clinical observation a rational therapy of nutrition has been evolved which affords a large field for professional usefulness, yet it

is mainly practical experience at the bedside which should dictate the diet. Theoretical knowledge of food requirement, however well founded, cannot replace the knowledge obtained by the actual observation of the effects of various forms of diet upon individual patients. A man cannot be nourished with calories alone and it would certainly restrict further progress in the study of the laws of nutrition if the caloric value of foods should receive more attention than their digestibility and the manner in which they are tolerated and prepared.

Professor C. von Noorden (Vienna) contributes an interesting article on Over-nutrition and Under-nutrition, based mainly on theoretical considerations. The practitioner would probably find considerable difficulty in formulating a diet for the treatment of obesity on Professor von Noorden's remarks. This deficiency, however, is compensated by a communication on Obesity by Professor W. Ebstein (Göttingen) which appears later in the work. The article on Diabetes Mellitus by Professor B. Naunyn (Strasburg) is well worthy of study. The discussion of the treatment of the disease is exhaustive and practical. Professor Naunyn rightly insist that the essential point is the regulation of the diet. The carbohydrates of the food and, if necessary, a portion of the albuminous substances, must be withdrawn until the urine is free from sugar, and then small quantities of these elements of diet must be gradually added until the tolerance of the patient is estimated. On account of its high caloric value fat is the most valuable food substance for the diabetic and in regulating the diet this fact must be borne in mind. The rules governing the diet in diabetes are well given by Professor Naunyn and they may readily be followed in actual practice.

Professor Ebstein in considering gout summarises in a clear manner his views on the pathogenesis of that disease. He maintains that gout is a more or less chronic disease which develops upon the basis of a pathological predisposition which is hereditary and generally congenital, and is usually designated the uric acid diathesis. He considers that the ultimate cause of this diathesis cannot be at present explained but suggests that the intimate relations existing between the nucleins and uric acid make it appear likely that in the uric acid diathesis there is an abnormal composition of the cell nucleus—that is, "of the protoplasm of the person in question." He further maintains that it is quite evident that an individual predisposition which may assert itself through entire families and races is a prominent factor in the uric acid diathesis. The symptomatology of gout, both of the primary arthritic and of the visceral varieties, is described fully and clearly.

One of the most interesting articles in the volume is that on Addison's Disease by Dr. L. Reiss (Berlin). He discusses at considerable length the pathogenesis of the disease and examines in detail the arguments which have been brought forward by two groups of observers, one group ascribing the disease to alterations in the adrenals and the other to changes which have been found in the abdominal sympathetic and other nerve areas intimately associated with it. He arrives at the conclusion that the clinical picture of Addison's disease does not depend exclusively upon a gradual destruction of the adrenals nor exclusively upon a disease of the nervous system, but that both these factors are simultaneously active in the development of the "symptom complex." Dr. Reiss considers that if a definition of the pathology of Addison's disease is desired it may be given in the following form. The disease depends upon an insidious, partly inflammatory, partly degenerative affection (most frequently tuberculous in nature), which implicates first the parenchyma of the adrenals and, secondarily, certain nerve areas which are in intimate relation to the adrenals (particularly the abdominal sympathetic and some nerve areas connected with it; perhaps, also, certain portions of the spinal cord). It will thus be seen that Dr. Reiss attempts to combine the views of the two groups mentioned above. Further investigation, however, is necessary before the pathology of Addison's disease can be considered as satisfactorily explained.

Amongst other contributions to the volume may be mentioned one by Dr. C. Benda (Berlin) on Acromegalia and one on the Anæmias by Professor Ehrlich (Frankfort-on-Main) and Professor A. Lazarus (Berlin). The Animal Parasites of Man are described by Dr. E. Peiper (Greifswald). The remarks on treatment are particularly worthy of note. The last article is by Professor von Jaksch (Prague) on the Important Poisons and their Treatment.

We can cordially recommend this book to the notice of our readers as containing a full consideration of many subjects which are inadequately dealt with in most text-books.

The Eye and Nervous System: Their Diagnostic Relations. By Various Authors. Edited by W. CAMPBELL POSEY, A.B., M.D., Professor of Ophthalmology in the Philadelphia Polyclinic, &c.; and WILLIAM G. SPILLER, M.D., Professor of Neuropathology and Associate Professor of Neurology in the University of Pennsylvania, &c. London and Philadelphia: J. B. Lippincott Company. 1906. Pp. 988. Price 25*s.* net.

OPHTHALMOLOGY is brought into closer touch with neurology than with any other branch of medicine. The eye, as an organ of special sense, is simply a specially differentiated end organ, and from this point of view ophthalmology must be regarded as a branch of neurology. Just as the physiology of the organs of the special senses is divorced from that of the nervous system by reason of the highly specialised methods which must be employed in its investigation and explanation, so ophthalmic pathology and practice manifest an extreme diversity from the methods of neurology. So extreme, indeed, is the diversity that it affords the strongest example which can be adduced in favour of specialisation in practice. Yet however great the diversity may be, both the ophthalmologist and the neurologist are daily confronted with the fundamental kinship of their subjects.

As the editors point out in the preface there has hitherto been no book in the English language which covers the ground where the two specialties meet. It is true that most of the material gathered together in this volume already existed, scattered about in the literature of the subjects. The busy ophthalmic surgeon, however, has little time to delve into the enormous mass of neurological literature, nor will the neurologist always find the explanation of an ophthalmic problem ready to his hand. This borderland treatise may therefore be said to aim at supplying a felt want. The book is the composite production of a number of American physicians and surgeons of acknowledged high repute in their various departments. The demerits of this method of gathering together individual and often divergent opinions under one cover are less conspicuous than in many other encyclopædias.

The work opens with an excellent brief account of the intracranial portion of the encephalic nerves by Dr. Spiller. (We may here point out that *iridic* is the correct adjectival derivative of iris, not *iritic*.) Dr. Souter (known in his own publications as Dr. Suter) follows with a chapter on sight, describing the structure of the eye, the eye as a refractive apparatus, the anomalies of refraction, and the determination of visual acuteness, and so on.

Chapter III. is a lengthy article on the psychology of the visual act and the focal diseases of the visual cortex by Dr. Charles K. Mills. The discussion is lucid, admirably arranged, and thoroughly up to date, as is exemplified by an adequate account of the recently published researches of Dr. F. W. Mott and Dr. A. W. Campbell; there is no

reference to Dr. J. S. Bolton's very careful histological studies. Both in this article and in the one already noticed by Dr. Spiller great emphasis is laid upon the two cases of quadrant hemianopia recorded by Hun and by Beevor and Collier. We are of the opinion that too great importance is attached to Beevor and Collier's case, more particularly in regarding it as opposed to Henschen's views of the representation of the upper and lower quadrants of the retina in the occipital cortex. The authors state that the lower quadrant of the field of vision was not affected and that the optic radiations were not implicated in the lesion. Careful inspection of the fields and of the diagrams of the lesion given in the paper seems to negative the absolute accuracy of these statements. There is considerable contraction of the periphery of the lower quadrants and the lesion was an extensive one, involving the posterior horn of the lateral ventricle. Dr. Mott has already drawn attention to the ambiguity which thus arises. In the Bowman lecture he makes the following reference to this case. "By the courtesy of these gentlemen (Dr. Beevor and Dr. Collier) I was able to see the sections, and they agreed with me that if by the calcarine cortex Henschen means the striate area, then there was sufficient left of the striate cortex on the upper lip of the calcarine fissure and the mesial surface of the cuneus to account for the preservation of vision in the lower quadrants of the hemianopic field of vision, as shown by the perimetric charts. In fact, the case illustrates very conclusively to my mind the truth of Henschen's views." Dr. Mills enters into a fascinating discussion of the cortical representation of chromatic phenomena, amblyopias, mind blindness, word blindness, agrammatism, and cognate defects. Like his delimitation of a concrete concept area his conclusions are largely theoretical but they are at the same time illuminating and useful as working hypotheses.

Chapter IV. deals with the examination of the eye, perimetry, colour blindness, and so on; it is written by Dr. Casey A. Wood. In the following chapter Dr. Duane gives an exhaustive account of the extra-ocular muscles and their derangements, including paralyses, spasm, heterophoria, concomitant squint, conjugate deviations, and nystagmus; it is an admirable dissertation and is as lucid as the complexity of the subject permits. Dr. J. E. Weeks deals similarly and equally well with the intra-ocular muscles. In Chapter VII. Dr. Edward Jackson treats of the peripheral affections of the fifth, seventh, and cervical sympathetic nerves. Dr. Würdemann's article on Diseases of the Retina and Optic Nerve is illustrated by fairly good coloured ophthalmoscopic drawings; it shows a tendency to compress too much into the small space at the author's disposal.

The last portion of the book (pp. 387 to 971) treats of intracranial tumours by Dr. Spiller; bulbar diseases by Dr. E. W. Taylor; arterio-sclerosis, multiple and diffuse sclerosis, Friedreich's disease, and paralysis agitans by Dr. W. Hirsch; parasyphilitic affections and insanities by Dr. F. X. Dercum; amaurotic family idiocy and infantile cerebral palsies by Dr. B. Sachs; abnormalities of development and acromegaly by Dr. C. W. Burr; diseases of the spinal cord and spinal nerves by Dr. T. H. Weisenberg; neuroses and psychoses by Dr. G. E. de Schweinitz; migraine and amaurosis by Dr. J. H. Lloyd; neuroses due to errors of refraction and muscular imbalance by Dr. S. D. Risley and Dr. H. F. Hansell; exophthalmic goitre and the psychological effects of ocular operations by Dr. W. Campbell Posey; the surgical treatment of intracranial lesions by Dr. C. H. Frazier; tremors, reflexes, and gaits by Dr. Joseph Sailer; and degeneracy by Dr. G. L. Walton.

It is unnecessary to review these articles in detail; nearly every nervous disorder having even a remote relationship to ophthalmology is mentioned and the most modern views are liberally discussed. We may single out for special praise Dr. de Schweinitz's paper on the ocular manifestations of hysteria and neurasthenia. Dr. Risley's discussion of the conditions occasioned by errors of refraction and imbalance of the extra-ocular muscles contrasts unfavourably with the restrained and scientific attitude adopted elsewhere in the book. The same is true in less degree of Dr. Hansell's article.

Enough has been said to show that the work is authoritative and trustworthy. It is well printed and illustrated, though greater care might have been exercised in correcting the proof sheets. The editors, too, should have insisted upon uniformity in the lists of bibliographical references; in some chapters these are excellent while in others they are entirely wanting.

The question arises how far the book will meet acknowledged requirements. It appeals to both ophthalmologists and neurologists. Such a work is likely to be of less value to the latter than to the former and we are inclined to think that the nerve specialists who are responsible for the majority of the chapters have assumed too great a familiarity with the intricacies of the nervous system on the part of their weaker brethren. The value of the work to ophthalmologists might have been enhanced by a freer use of elementary diagrams; moreover, many of the articles might have been compressed with advantage, thus leaving space for more detailed explanatory matter.

Enteric Fever in India and in other Tropical and Sub-Tropical Regions: A Study in Epidemiology and Military Hygiene. By ERNEST ROBERTS, M.B., D.P.H. Camb., Major, Indian Medical Service; formerly Deputy Sanitary Commissioner North-West Provinces; lately Statistical Officer to the Government of India in the Medical and Sanitary Departments, and Officiating Secretary to the Sanitary Commissioner with the Government of India. Illustrated with 36 original maps, charts, and diagrams. London: Baillière, Tindall, and Cox. Calcutta: Thacker, Spink, and Co. 1906. Pp. xiv.–571. Price 21*s.* net.

A CAREFUL study of this work leads to the conclusion that it is an exceptionally able and very valuable contribution and one exhibiting a wealth of information and careful thought on the subject of which it treats. It could only have been produced by an author who, in addition to being unusually well acquainted with the literature and with all the latest views about enteric fever, had had an exceptional experience and varied opportunities, official, professional and otherwise, of studying his subject from a comprehensive and trustworthy point of view. In these respects his official position and duties have given him a vantage-ground for ascertaining all the facts and comparing them one with another. He has, moreover, brought to the treatment of his subject a broad, judicial, and discriminative judgment in his efforts to assign an appropriate place and value to his subjects and has avoided any undue spirit or tone of advocacy in favour of any particular view. All the main problems have been submitted to examination in the light of the latest and best information available. The work is, as it claims to be, to a large extent original in its design and method of treatment and partakes of the nature of a philosophical treatise intended for the study of the etiologist, the epidemiologist, and the statesman, as well as for the practical sanitarian. It is not so much a book for the busy practitioner or clinical physician, for at the present time, when the trend of scientific and public opinion in regard to this class of disease especially is steadily but surely moving in the direction of preventive rather than of curative medicine, it concerns everyone to be familiar with what is known about the causes of disease. And here it may be remarked that the sub-title expresses and defines the scope and the aim of the work more accurately and fully perhaps than does the main title. Enteric fever in India provides the text, the

illustrations, and the moral of the discourse, but the writer's whole purpose has been directed to a study of the main problems of epidemiology and of military hygiene.

The nature and scope of the book will be seen from a brief statement of the contents. Following an interesting and well-written preface the first chapter, which is introductory, consists of a historical survey; Chapter II. traces the rise and course of enteric fever among the European troops serving in India; Chapter III. deals with etiology with special reference to the terms of the epidemiological problem in India—the human host, the specific agent of infection, and the environment; and the three succeeding chapters discuss that problem very fully, while Chapter VII. gives a summary of the epidemiology and treats of the sources of infection; Chapters VIII. and IX. consider the question of enteric fever among the natives of India and those of other tropical and sub-tropical regions and very carefully discuss the biological factors in operation as affecting their relative immunity, about which, with some exceptions, there cannot be any doubt; and Chapter X. is devoted to conclusions and indications, prophylaxis, and suppression. Medical reports afford clear and striking evidence, according to the author, of the truth of what Bryden said that "the diseases of the unacclimatised diminish year by year as the adaptation to heat influence is perfected." And many of the prophylactic proposals and suggestions in this work are in reality based upon a recognition of this fact. The volume concludes with a valuable appendix descriptive of the various methods employed in Germany, and of the technique in use at the bacteriological institutes there for the examination of materials received from suspected cases of enteric fever, together with a bibliographical summary and index.

The author has, as might naturally be expected of one who has held the position of secretary to the Sanitary Commissioner, had recourse to the long series of annual reports issued from that department of the Government of India for a large amount of information—and we do not think that he could have gone to any better source of supply. We have called attention for some years past to the very valuable nature of these reports and to the fact of their furnishing, in our opinion, a veritable and trustworthy mine of information. The author in his preface makes some very pertinent and forcible remarks in refutation of prevalent misconceptions about the position occupied by statistical science in relation to bacteriology and other allied methods of research. It was absolutely necessary to the proper fulfilment of his task that he should have recourse to statistical evidence, and his diagrams and tables are simple in construction and always strictly pertinent to, and illustrative of, the subject in hand. As he says, statistics are, *taken truly*, simply organised symbols of experience which is, after all, the guide of life. It should not, however, be imagined that figures and statistics occupy any wearisome or unduly prominent place in the volume. The reader has only to turn to Chapter III., for example, and even cursorily to glance through the pages from 56 to 132 and to page 328 *et seq.* of the summary of the epidemiology in Chapter VII. to get a sample of the scientific interest of the author's method of treatment of his subject. And this treatment is very broad. We have not only to consider the human host, the specific parasite, and the circumstances of time and place and their inter-relations, but the point to grasp, he states, is "that the disease process is to be expressed as the function of the sum of all these constituent factors."

The guidance of the bacteriologist is indispensably necessary and the work under review has, so to say, been built up upon the assumption that the connexion of the bacillus typhosus of Eberth-Gaffky and its allies with true enteric and so-called paratyphoid infections has been fully demonstrated. But taking this for granted, it must be admitted that the bacillus by itself is, practically speaking, sterile and inoperative without the concurrence of other causes and antecedents. The author has not, as some medical authors are too prone to do, lost sight of a defect in the inductive system pointed out, we believe, by John Stuart Mill. Bacon tacitly seems to imply the assumption, so contrary to all we know of nature, that a phenomenon cannot have more than one cause, and some of our pathologists fall into similar error. The relative parts played in the spread of enteric fever by other causes than water, e.g., the infected soil of camps, flies, direct contagion, and through the medium of the excreta—the fæces during the earlier and the urine (bacilluria) during the later and convalescent stages—are all passed in review, and given, we think, due importance. The author has also much that is valuable to say about the influence of age and the incidence of the disease among the recently arrived European troops in India, the physiological disturbances arising out of climatic changes, the question of race and food-supply, the contamination of the water sources on field service and in cantonments, and, in short, about all the real or alleged causes (filth causes) and conditions adversely affecting the soldier and tending to the spread of enteric fever, together with the sanitary and prophylactic measures that are recommended or suggested. These are matters which have already been discussed from time to time in THE LANCET and, speaking generally, the views which we have expressed are in accord with those which are so ably set forth in the treatise before us. The book should prove a good and suggestive guide to Lord Kitchener's commission of inquiry into the subject.

Trypanosomes, Trypanosomiasis, and Sleeping Sickness: Pathology and Treatment. By H. WOLFERSTAN THOMAS and ANTON BREINL. *Gland Puncture in Trypanosomiasis* By the late J. E. DUTTON and J. L. TODD, Liverpool School of Tropical Medicine. Memoir 16. The Trypanosomiasis Research, 1903, 1904, and 1905. Liverpool: University Press. Pp. 102 and 10 figures. Price 12*s.* 6*d.* net.

IN THE LANCET of June 30th, p. 1834, we reviewed Vol. VI., Part II., of the Thompson-Yates and Johnston Laboratories Report, which dealt with, amongst other matters, Trypanosomata, in papers by various authors. Two of these communications have been issued in an expanded form as Memoir 16 of the Liverpool School of Tropical Medicine.

In 1902 the late Dr. J. E. Dutton having discovered a trypanosome in the blood of a European under the care of Mr. R. M. Forde, the former and Dr. J. L. Todd were appointed by the Liverpool School of Tropical Medicine to investigate the disease in Senegambia. The work of these observers was subsequently taken up by Dr. H. W. Thomas, assisted by Dr. S. F. Lenton and Dr. Anton Breinl, the latter undertaking the pathologico-histological side of the work. The memoir under review constitutes the report of their researches.

The report opens with a description of cases of sleeping sickness in man, of which seven are minutely detailed; the results are then given of inoculation experiments with trypanosoma Gambiense on baboons (four of which were successfully inoculated), on monkeys, on a horse, a donkey, and a cow, and on sheep, goats, dogs, cats, rabbits, and guinea-pigs. The morphology of the parasite is described, with remarks on the chronicity of the disease and its virulence. With regard to immunity, certain animals appear to possess a more or less stable resistance to infection with trypanosomes, such as birds and fish. Baboons, goats, and sheep do not easily succumb, whilst rats show occasional resistance. All efforts to isolate a toxin proved negative, whilst no satisfactory results were obtained as regards the possibility of the

agglutination of the parasite acting as an aid to the diagnosis of the disease.

Next follow researches on the trypanosoma dimorphon of the Gambian horse disease; on the trypanosoma equiperdum of dourine; of the trypanosoma equinum of the mal de caderas; and of the trypanosoma Evansi of surra. Passing by the account of the bacteriological examinations, we come to the important subject of the treatment of trypanosomiasis. The veterinary profession has in this respect found that arsenic is the only drug out of all the countless remedies tried that has given any encouraging results in the way of prolonging life but the effect is only temporary. In the search for a more effectual remedy a meta-arsenic aniline compound, atoxyl, proved the most satisfactory but it was not ideal. The authors state that it is the only remedy at present giving any prospect of a cure but the drug must be administered in as high doses as possible and continued for a long period. Trypanroth was also experimented with. It was found to be a not very safe drug, as it was prone to cause ulceration and sloughing and nephritis. Intramuscular injection is the best method of administering it. A combination of trypanroth and arsenic, however, gave better results both in the hands of Laveran and others. The method causes a hyperleucocytosis and this condition has an effect upon the parasites. Lastly, atoxyl and trypanroth together proved of benefit, as it was found that infected animals gave more promising results than did controls treated with either of these remedies separately.

Part II. of the report contains the results of the post-mortem examinations with descriptions of the macroscopic and microscopic changes. The memoir concludes with an account of Gland Puncture in Trypanosomiasis, compared with other methods of demonstrating the presence of the parasite, by the late Dr. Dutton and Dr. Todd. Some excellent plates illustrate the volume.

LIBRARY TABLE.

Atlas der äusserlich sichtbaren Erkrankungen des Auges. (*Atlas of the External Diseases of the Eye*) By Professor Dr. O. HAAB of Zürich. Third edition. With 86 coloured illustrations and 13 illustrations in the text. Lehmann's Medicinische Handatlanten. Munich: J. F. Lehmann. 1906. Pp. 247. Price 10 marks.—When a book has reached its third edition it may generally be said to meet a felt want. In educational matters it is not always the highest good to satisfy immediate desires; the child is debarred from a debauch of sweets in the interests of his ultimate benefit. We do not consider that it is altogether to the student's advantage that he should be provided with beautifully executed coloured illustrations of common external diseases, especially when they are published at a relatively very low cost. It is easier to sit in an arm-chair turning over the leaves of an atlas than assiduously to attend in the out-patient department. Common diseases should be rendered familiar by actual contact, though the artist's skill may well be lavished upon the depiction of rare forms of disease, which are difficult of access on account of their rarity. Haab's "Atlas of External Diseases of the Eye" is remarkably good of its kind. The disease represented can be diagnosed from almost every illustration, and if there is any doubt it is only necessary to look at the opposite page. It is excessively difficult to represent naturally the effect of the cornea, a transparent curved surface. The attempt is usually made by reproducing the corneal reflex, but this has the disadvantage of often obscuring the details to which attention is specially directed as the subject of the picture. A corneal ulcer with hypopyon and an iris bombé are examples of subjects which artists seem to find impossible to represent in a lifelike manner. It must not be forgotten that the impression left by the careful examination of a case is derived from a combination of the appearances from different aspects. Another, and probably the greatest, difficulty is that of finding an artist who not only reproduces the general effect but also succeeds in keeping the details accurate. It almost requires a Memling to do this and such an artist is rare. The text of Haab's atlas is not merely a description of the plates; it is a comprehensive account of the diseases illustrated, including their pathology and treatment. Indeed, this book together with the same author's atlases of ophthalmoscopy and operative surgery of the eye comprise a complete manual of ophthalmology. Nothing but praise can be given for the manner in which this portion of the work has been carried out. The author has had enormous clinical experience which he brings to bear with conspicuous ability and sound judgment.

The Miracle Worker. By GERALD MAXWELL. London: E. Grant Richards. 1906. Pp. 349. Price 6*s.*—This is an exciting novel of the pathological kind. The protagonist is an Afghan surgeon, one of the sons of an Amir of Afghanistan. He discovers an anæsthetic which will bring about a state of suspended animation and he is also a very skilled operator, as will be understood when we say that he is able to remove "those parts of the cortex where memory pictures are stored" without affecting any of the other areas. He also "deftly plunged his knife under the skin and in an instant had severed that branch of the facial nerve which actuated this particular muscle." The muscle in question was one connected with the mouth and, as we learn further on, with the lower lip which remained almost immobile. We will not be so unkind as to give away Mr. Maxwell's plot but to any reader who cares for an exciting novel in which probabilities are not too much considered the book may be cordially recommended.

JOURNALS AND MAGAZINES.

The Journal of Anatomy and Physiology. Conducted by Sir WILLIAM TURNER, K.C.B., F.R.S.; D. J. CUNNINGHAM, F.R.S.; G. S. HUNTINGTON, M.D.; A. MACALISTER, F.R.S.; and J. G. M'KENDRICK, F.R.S. Vol. XLI. Third series. Vol. II., Part 1. With plates and illustrations in the text. London: Charles Griffin and Co. Pp. 90. Annual subscription, 21*s.*—The contents of this part are: 1. Note on an Unusual Anomaly in Crania from the Island of Kwaiawata, New Guinea, by W. L. H. Duckworth, M.D., with five figures in the text. The anomaly consists in the presence of symmetrically paired spinous processes about three millimetres in length, projecting on either side of the apertura pyriformis nasi, just below the level at which, as in most of the Oceanic negroes, the sharp margin of the apertura is lost. 2. Partial Deficiency of the Pericardium, by Arthur Keith, M.D. Aberd., with two figures in the text. The deficiency is on the left side of the pericardium. 3. The Histogenesis of Nerve-fibres; a Cytological Study of the Embryonic Cell Nucleus, by John Cameron, M.D. Edin., with 12 figures in the text. 4. Notes on the Anatomy of an Eunuchoid Man dissected at the Anatomy School, Cambridge, during 1905, by W. L. H. Duckworth, M.D., with two figures in the text. 5. The Papillary Ridges and Papillary Layer of the Corium in the Mammalian Hand and Foot, by Walter A. Kidd, M.D. Lond., with 12 figures in the text. 6. Anatomical Notes, by R. B. Seymour Sewell, B.A., with four figures in the text. The notes refer to the proximal phalanx of the index finger, to an interarticular fibro-cartilage between the astragalus and the malleolus of the fibula, and to the lamellæ in fœtal astragalus. 7 and 8. Hour-glass Stomach; and a Rare Anomaly of the Carotid Arteries (Internal and External), by A. E. Orr, M.D. 9. Three cases of Malformation of the Tracheo-œsophageal Septum, by Arthur Keith, M.D. Aberd., and J. E. Spicer,

M.B. Cantab., with five figures in the text. 10. Two cases of Fusion of the Semilunar and Cuneiform Bones in Negroes, by Douglas E. Derry, M.B. Edin., with three figures in the text. 11. Epilunar and Hypolunar Ossicles, Division of the Scaphoid, and other Abnormalities in the Carpal Region, by Henry M. Johnston, M.B. R.U.I., with four figures in the text. 12. The Development and Evolution of the "Papillary" Ridges and Patterns on the Volar Surface of the Hand, by Evelyn John Evatt, with three figures in the text. 13. The Anatomical Variations presented by a case of Thoracopagous Lamb Monster, together with an account of the developmental explanation of the same, by Richard J. A. Berry, M.D. Edin., and J. D. Sinclair, M.R.C.S. Eng., with three figures in the text. 14. Observations on the Head of the Tibia, by F. G. Parsons, F.R.C.S. Eng., with four figures in the text. 15. Note on a case of Abnormal Disposition of the Peritoneum, by J. D. Lickley, M.B. Glasg., and J. Cameron, M.D. Edin., with two figures in the text.

Reports and Analytical Records
FROM
THE LANCET LABORATORY.

PREPARATIONS OF FORMATES.
(DUNCAN, FLOCKHART, AND CO., 143, FARRINGDON-ROAD, LONDON, E.C.)

THE formates have comparatively recently been introduced into medicine on account of their stimulating effects upon the muscles and of their increasing the power of resistance to fatigue much in the same way as does caffeine. Thus the salts have been administered in neurasthenia and nervous prostration with encouraging results. The formates prescribed are commonly in the form of sodium, potassium, calcium, and lithium salts. We have received from Messrs. Duncan, Flockhart, and Co. a series of elegant pharmaceutical preparations containing mixed formates. In addition is a preparation known as glyceroformate which contains in each fluid drachm two grains each of sodium and potassium formate, with one drachm of glycerophosphate syrup. We have also received specimens of flexible gelatine capsules containing the formates of sodium, potassium, calcium, quinine, and strychnine. Lastly, the preparation of formates with liquid extract of malt is worthy of mention. All these preparations appear in an attractive form.

OLD CHAMPAGNE BRANDY (1854).
(ALEXANDER RAE AND SONS, STOCKBRIDGE, EDINBURGH.)

This brandy exhibits the peculiar characteristics of a choice old grape spirit. It is remarkably soft to the palate and has a very fine bouquet and flavour. Its alcoholic strength, as might be expected from its age, is relatively low. On analysis, however, the amounts of secondary products are not so high as is usually found in old brandy. The total secondary products amounted to 240 grammes per hectolitre of absolute alcohol present. The ethers amounted to 80 grammes per hectolitre. It is a well-matured, mild brandy and is therefore suitable for medical requirements.

(1) SOLOID PRODUCTS FOR OPHTHALMIC USE; AND (2) TABLOID XAXA AND DOVER'S POWDER.
(BURROUGHS, WELLCOME, AND CO., SNOW HILL BUILDINGS, LONDON, E.C.)

(1) The soloid products for ophthalmic use are very convenient for preparing solutions of definite strengths for ophthalmic purposes. Thus the soloid atropine sulphate when dissolved in one drachm of water yields a 1 per cent. solution of the alkaloidal salt. Soloids are thus prepared containing atropine and cocaine, homatropine, copper sulphate, physostigmine salicylate, dionin, and so forth. Tabloid ophthalmic products are also prepared for placing directly on the conjunctiva. Typical examples of these are tabloids containing dionine and physostigmine. (2) The value of a tabloid containing pure acetyl salicylic acid (xaxa) with Dover's powder is considerable. The combination is indicated in influenza, catarrh, and various febrile and infective conditions.

MIOL.
(MIOL MANUFACTURING CO., 66, SOUTHWARK BRIDGE-ROAD, LONDON, S.E.)

We find by analysis that this preparation is correctly described as consisting of malt and oil in combination with iodine and phosphorus in the free state. There was no difficulty in recognising the presence of free iodine and free phosphorus. Further, the preparation showed an active digestive effect upon starch emulsion. Clinical results indicate that the use of miol in wasting diseases leads to a steady increase of body weight which is maintained. The emulsion presents no objection in regard to its palatability or appearance.

SWEDISH BREAD (SCHUMACHER.)
(F. BAGGER, 3 AND 4, GREAT WINCHESTER-STREET, LONDON, E.C.)

We have received specimens of Swedish bread in the form of oval biscuits. They constitute the national bread of Sweden and are made with rye flour. Being prepared with fresh yeast they possess a slightly bitter and nutty flavour as opposed to the sour flavour produced when leaven is substituted. The biscuits are somewhat dry and are rough in texture, qualities which are assumed to be in their favour as an article of food since these conditions compel complete mastication. They are quite palatable, the flavour improving upon acquaintance. Rye bread is, of course, nourishing, containing as it does all classes of food material. We found that the proteid amounted to 11·20 per cent.

STYPTI-RENAL TRITURATES.
(ARTHUR H. COX & CO., BRIGHTON.)

The advantage of having the active principle of the adrenal gland contained in a small pellet is chiefly that in the dry state the hæmostatic principle does not diminish in activity on keeping. The triturates contain one-fiftieth of a grain of stypti renal, which is said to be equal to four grains of the adrenal gland. The triturate is, therefore, a ready hæmostatic for controlling hæmorrhage during operations.

CHEVALIER MALT FLOUR.
(HARRY WITHERS, ASHLEY-ROAD MALTINGS, BRISTOL.)

This is a well-prepared malt flour presenting on analysis results which are decidedly in its favour as an article of food. The analysis was as follows: moisture, 6·00 per cent.; carbohydrates, exclusive of sugar and cellulose, 64·88 per cent.; maltose, 14·00 per cent.; proteid, 8·82 per cent.; fat, 2·00 per cent.; cellulose, 2·80 per cent.; and mineral matter, 1·50 per cent. The mineral matter contained an abundance of phosphates. Very nearly one-fourth part of the malt flour proved to be soluble in cold water—a result which is an indication of the effectiveness of the malting process. The indigestible cellular matter has evidently been reduced to a minimum. As is well known, malt flour in its entirety is a very nutritious and easily digested food.

VITALIA.
(VITALIA, LIMITED, 5, ALBION-PLACE, BLACKFRIARS BRIDGE, LONDON, S.E.)

This is a preparation of defibrinated and deflavoured ox-blood turning semi-solid on heating and exhibiting the spectrum of hæmoglobin. We have on a previous occasion referred to this preparation but it has since been improved in certain important respects. It is now flavoured with sherry and sweetened with saccharin and as a consequence is free from disagreeable taste. Its value is chiefly that of a hæmatinic, while, of course, raw albumin is a nutrient.

Looking Back.

FROM

THE LANCET, *SATURDAY*, Nov. 15th, 1828.

CENTRAL POINT OF THE NERVOUS SYSTEM.—DIVISION OF THE NERVES, AND SUBSEQUENT RE-UNION OF THEIR ENDS.

M. Flourens has recently endeavoured to determine the limits of the central and vital point of the nervous system. From various experiments, he infers that this point begins at the origin of the eighth pair, and extends no further than one fifth or one-sixth part of an inch towards the medulla oblongata. On dividing the brain above this point it is deprived of life, but the spinal chord continues to live; on dividing the spinal chord below it, the reverse takes place.

In another memoir M. Flourens gives the result of his experiments on the division of the nerves, and the subsequent re-union of their ends. In most cases, the re-union was complete, and by it the nerves recovered even their sensibility and influence on motion. M. Flourens being desirous of knowing whether the ends of two different nerves would unite, having brought them into close contact, kept them in this situation, and found that, in all the cases, complete union took place; in some of them the function of the nerves was restored; in others it remained imperfect; but, in all, the irritation of the lower was communicated to the upper nerve, so that we can hardly doubt of the formation of real nervous substance between the divided ends.

MEDICINE AND THE LAW.

Medical Men under no Obligation to attend Patients.

AT a recent inquest at Wolverhampton evidence was given that a medical man who was called upon and asked to attend the deceased late at night refused on the ground that he was too tired, and as the jury seemed to be inclined to condemn him for his refusal the coroner very rightly pointed out that a medical man is under no obligation to respond to the summons of any person who may desire his attendance. Two or three other facts mentioned in this case are worth noting. The practitioner in question had on a previous occasion attended the same patient and had received for his advice and a bottle of medicine the sum of 1*s*. The deceased had recently been removed by his relatives from the workhouse. The coroner, after hearing the evidence, told the jury that there were other medical men in the district who might have been asked to attend but were not; that he had no doubt that medical aid could have made no difference to the result; and that the patient would have been better attended had he been allowed to stay in the workhouse. There are members of the public who blame a medical practitioner in such circumstances as those described but who forget that he has his living to earn and his own health and the welfare of his patients to consider; that the Poor-law is organised with a view to provide medical aid to the poor; and that if medical men are to convert themselves, so to speak, into "charitable institutions" even these as a rule are allowed to regulate their alms according to their resources or their discretion and are not compelled to relieve all applicants without power to refuse or to discriminate.

The Depositions and Declarations of Deceased Persons.

In the proceedings now pending against a prisoner charged with murder by the performance of an illegal operation counsel for the Treasury has called attention to the difficulty which besets the reception of evidence as to statements made by the deceased and bearing on the charge. The depositions of a deceased witness or of one too ill to attend the trial may be read in court if the evidence has originally been given on oath before a magistrate in the presence of the accused and with full opportunity for cross-examination. These conditions naturally must often be impossible to fulfil in the case of a person dying as the result of a crime. On the other hand, evidence of a statement, or as it is popularly called, a "dying declaration," made by a deceased person whose death is the subject of inquiry upon a charge of murder or of manslaughter may be received if the deceased when making the statement did so with a "settled hopeless expectation of death." Anyone to whom such a statement is proved to have been made can give evidence with regard to it. The condition, however, mentioned above that the patient knows himself to be dying and has no hope of recovery is not easily established. As Mr. Muir, appearing for the Treasury in the case referred to above, observed, medical men naturally abstain from telling their patients that they are dying even when there is no hope of their recovery, and he might have added that persons to whom such information might be given are frequently not in a condition to volunteer a very definite account of what has happened, nor would it be humane to ply them with questions. The admissibility of statements of this latter class is, of course, based on the belief that a person in the presence of imminent death would shrink from telling an untruth, although not put upon his oath or subjected to cross-examination.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

AN ordinary meeting of the Council was held on Nov. 8th, Mr. HENRY MORRIS, the President, being in the chair.

It was resolved to issue diplomas of Membership to 120 successful candidates.

A letter was read from Mr. R. J. Godlee and Mr. C. H. Golding-Bird reporting their attendance as the Representatives of the College at the second meeting of the delegates of the various learned societies interested in the vivisection laws.

A letter was read from the Royal Commission on Vivisection inquiring whether the College was desirous of nominating a representative to give evidence before them. It was resolved to request the President to represent the College. Professor Howard Marsh was elected the Representative of the College on the Court of Governors of the University of Sheffield.

A letter was read from Dr. Winslow Anderson of San Francisco reporting that his diploma of Membership, dated July 30th, 1891, was destroyed by fire on April 19th, 1906, at San Francisco during the general conflagration in that city, requesting that he may be granted a certificate of having received the diploma of Member, and inclosing an affidavit in support of his application. It was resolved to issue the certificate as requested.

The opinion of Mr. Danckwerts, K.C., in reference to the admission of women to the diplomas of the College was received. It was resolved to refer the opinion to a committee to consider and report.

The agenda paper for the annual meeting of Fellows and Members on Nov. 15th was approved.

The PRESIDENT reported that the Bradshaw Lecture would be delivered by Mr. Edmund Owen on Wednesday, Dec. 12th, at 5 P.M., and that the subject of the lecture would be, "Cancer: its Treatment by Modern Methods."

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH.—A quarterly meeting of the Royal College of Physicians of Edinburgh was held on Nov. 6th, Dr. J. Playfair, the President, being in the chair. Robert Cranston Low, M.B., Ch.B. Edin., was introduced and took his seat as a Fellow of the College. Robert Brooks Popham, M.R.C.P. Edin., F.L.S., of West Ealing, was admitted by ballot to the Fellowship of the College. On a ballot the following candidates were admitted to the Membership of the College after examination: William Herbert Fawcett, L.R.C.P. Edin., F.R.C.S. Edin., D.P.H., of Bournemouth; Robert Durward Clarkson, M.D., C.M., B.Sc. Edin., of Falkirk; Robert William Johnstone, M.B., Ch.B. Edin., of Edinburgh; and Hugh Angus Stewart, M.B., Ch.B. Edin., of Pitlochry. The Registrar reported that since the last quarterly meeting of the College 49 persons had obtained the licence of the College by examination. Dr. Alexander Goodall was recognised as a lecturer on physiology.

GAS STOVES:

AN EXPERIMENTAL INQUIRY RELATING TO THEIR THERMAL EFFICIENCY AND TO HYGIENIC CONSIDERATIONS.

REPORT BY THE COAL SMOKE ABATEMENT SOCIETY.

THE tests were commenced on May 5th and completed on June 6th, 1906. The report is divided into three parts as follows: Part I. contains a general description of the tests and the methods adopted, and also of the stoves; Part II. contains the results of the tests, chiefly in tabular form; and Part III. is a general consideration of the results and a comparison between gas and coal fires.

I.—A GENERAL DESCRIPTION OF THE TESTS AND METHODS ADOPTED AND ALSO OF THE STOVES.

The rooms in which the tests were carried out were situated round a square court in the new Public Offices, Westminster, and all the rooms were on the same floor and of approximately the same cubic capacity, containing about 4000 cubic feet each. The walls were of brick, unplastered; the floors and ceilings of coke breeze concrete, laid between iron girders, no flooring boards being in position. Each room had one window, which fitted practically airtight, and was kept closed, and one door opening into a continuous corridor running completely round the square. The doors were so arranged that they would not close completely, but each had a stop fitted which gave half an inch clear space on the latch side when closed, thus allowing air from the corridor to enter the rooms, and this being the only inlet to the rooms the corridor thermometer recorded the temperature of the inlet to the rooms. There was no furniture in the rooms. The flues were all 68 feet high and 9 inches in diameter, being lined throughout with 9 inch glazed stoneware pipe. The conditions were therefore exceptionally favourable for obtaining fair tests, since they were alike for all the stoves. Each stove was tested for a period of eight hours continuously, being lighted at 9 A.M. and turned out at 5 P.M. The pressure of the gas was kept constant at twelve-tenths of an inch of water. The meters used were specially constructed five-light meters arranged to register tenths of a cubic foot. The flues from the gas stoves passed through a sheet-iron plate, fixed against the opening of the main stoneware flues, and closing them completely, except the opening left for the stove flues. The entrance of air to the main flues was therefore entirely prevented except that which passed through the stoves.

There were 25 different makes of gas stove tested, a short description of each of which follows:—

The "Whitby," by Messrs. R. and A. Main (49, Queen Victoria-street, London, E.C.). Maker's number, 561.—This stove was fitted with a 3½ inch diameter flue four feet long. Clay ball fuel made incandescent by Bunsen burners. The stove stood upon its own base in the room.

The "Burless," by Planet Co. (2, Stonecutter-street, London, E.C.). Maker's number, 177 BF interior.—This was rather like a well fire, let into the wall of the room, fitted with duplex burners of the Bunsen type, and clay ball fuel. The main flue was connected directly with the back of the stove, there being no small flue. The fire was fitted with a sliding canopy with a large fire-brick back. The canopy could be pushed home so as to close the flue completely, and was thus a source of danger.

The "Waverley," by Richmond (122, Queen Victoria-street, London, E.C.). Maker's number, 2188.—Fitted with 3½-inch diameter flue four feet long. Clay ball fuel heated by Bunsen burners. Fitted with a small burner on top of stove for boiling.

The "Ilford," by Richmond. Maker's number, 215.—Fitted with a 3-inch diameter flue four feet long. Also with a hot-air chamber. Clay ball fuel heated by Bunsen burners.

The "Cambridge," by Richmond. Maker's number, 2569.—Condenser stove, no flue, but intended to condense the products of combustion into a liquid, which collects in a pan placed under the stove. Has two large Argand burners with glass chimneys, giving a white light. The products of combustion are caused to pass through several vertical hollow columns, where some of the water produced by combustion condenses and trickles down the columns, where it is intended to dissolve the injurious products of combustion and prevent their passage into the room. There are 12 such hollow columns in this stove.

The "Syphon," by Clarke (59, Holborn Viaduct, E.C.). Maker's number, 2.—Similar in principle to the previous stove and intended to condense its own products; it has, therefore, no flue. Fitted with one Argand burner with a glass chimney and gives a white flame. Condensation takes place as before in vertical hollow columns, of which there are two.

The "Syphon Radiator," by Clarke. Maker's number, 26.—This also is a condensing stove of similar principle to the two last but is fitted as well with a cast-iron radiator on the top. Has two Argand burners giving a white light, and eight condensing columns.

The "Trident," by Davis (209, Camberwell-road, London, S.E.). Maker's number, D.—Fitted with a four-inch flue four feet long. Has a peculiar arrangement of burner called the "Trident" which consists of several vertical tubes running from inlet pipe to top of flue and perforated by holes at short intervals. In front of these tubes is hung a curtain made from asbestos, which becomes incandescent on lighting the jets from the vertical tubes, the flame being an atmospheric one. The curtain is not continuous but somewhat like a net and made from asbestos fibre twisted into vertical wires.

The "Albany," by Davis.—Fitted with a 4-inch flue two feet long. Clay ball fuel heated by Bunsen burners. Has two large heating chambers and duplex burners, each section regulated independently.

The "Beaufort," by Davis.—Fitted with a 4-inch flue two feet long. Has a large heating chamber like the "Albany" and twin burners, each section acting independently. Clay ball fuel and Bunsen flames.

The "L.D." by Davis.—Has a 3-inch flue four feet long. Clay ball fuel and Bunsen burners.

The "Jersey," by Fletcher (124, Queen Victoria-street, London, E.C.).—Fitted with a 4-inch flue three feet long. Clay ball fuel and Bunsen burners.

The "Victory," by the Cannon Co. (57, Holborn Viaduct, E.C.). Maker's number, 2108.—Fitted with a 3-inch flue four feet long. Has a heating chamber and clay ball fuel heated by Bunsen burners.

The "King," by Wright (21, Queen Victoria-street, London, E.C.). Maker's number, B2010.—Fitted with a 3-inch flue three feet long. Clay ball fuel and Bunsen burners. Has also a "heat-saving apparatus."

The "Grosvenor," by the Cannon Co. Maker's number, 2149.—Fitted with a 3½-inch flue three feet long. Clay ball fuel and Bunsen burners. Has internal heating chambers.

The "Kent," by Davis.—Has a 4-inch flue two feet long, a large heating chamber and duplex burners with independent regulating cocks, and clay ball fuel heated by Bunsen flames.

The "Victory" (double burner) by the Cannon Co.—Has a 3½-inch flue four feet long, fire brick bottom, with cellular back brick and large hot-air chamber. Clay ball fuel and Bunsen burners.

The "Iris," by the Cannon Co. Maker's number, 2101.—Has a 3½-inch flue four feet long and clay ball fuel with Bunsen burner.

The "Chelsea," by Main. Maker's number, 1020.—Has a 3½-inch flue seven feet long, waste heat extractors, and clay ball fuel with Bunsen burners.

The "Royal Sovereign," by Richmond.—Has a 4-inch flue six feet long, a heat-saving apparatus, and clay ball fuel heated by Bunsen burners.

The "Delphi," by Wilsons (76, Queen-street, Cheapside, London, E.C.).—Fitted with a 3½-inch flue four feet long. Has a thin layer of clay ball fuel, exposing a large surface to the room. Is arranged to fix against a wall and is provided with two adjustable ventilators in the top through which air may be admitted to the main flue. These were not used during the test.

The "Uranus," by the Planet Co. Maker's number, 360.—Fitted with a 4-inch flue four feet long. Clay ball fuel and Bunsen burners. It has a canopy, fitted with radiating gills, placed over the fire.

The "Indus," by Fletcher. Maker's number, 12.—Has a 3½-inch flue three feet long, and heats by means of sprays of cast iron made incandescent by Bunsen flames.

The "Edward VII.," by the Cannon Co.—A condensing stove without a flue. Has a large radiator of vertical hollow columns, similar to those used for hot-water radiators; there are ten of these columns. The fire is clay ball fuel heated by Bunsen burners and the products of combustion are intended to pass into the radiator where the water, condensing, runs down into a tray placed beneath, as in the condensers previously described.

The "Coronation," by the Cannon Co. Maker's number, 6.—A condenser somewhat similar to the last, but with only six columns. The fire consists of Bunsen burners playing under the columns, and it is quite inclosed and invisible from the outside until a door is lifted.

The tests were directed towards finding out (*a*) the thermal efficiency of the stoves, considered as apparatus for heating the air of rooms; and (*b*) the effect of the stoves upon the air of the rooms thus heated, considered from a hygienic point of view. The first was therefore mainly a question of gas burnt and heat given to the air passed through the room. The second involved an analysis of the air of the rooms for injurious products of combustion.

The following is a list of the data obtained for the purpose of determining the thermal efficiency. 1. The number of cubic feet of gas burnt per hour during the test. 2. The composition of the gas burnt and its calorific value. 3. The temperature of the air in the corridor whence air was admitted to the rooms. 4. The temperature produced in the rooms under test: (*a*) at the level of six feet above the floor and six inches from the wall opposite to the fire; (*b*) at 18 inches below the ceiling in the centre of the rooms; and (*c*) at six feet in front of the fire and six inches above the floor, exposed to the radiant heat. 5. The temperature of the flue gases issuing from the top of the flue taken by a

thermometer hanging in the middle of the flue by a string six feet long attached to a cross piece of wire or wood laid on the top of the flue. 6. The percentage of carbon dioxide contained in the flue gases. 7. The velocity of the upward current in the flues as determined by smoke tests. The two last were directed towards finding the volume of the flue gases passed per hour and from this the volume of air passed through the rooms. All temperatures were taken half hourly. The thermometers used were tested, their errors ascertained, and the necessary corrections made.

In order to ascertain the effect of the stoves upon the air of the rooms the following observations were made and tests carried out. 1. An analysis of the air of the rooms was made for carbon dioxide. 2. An analysis was made for carbon monoxide. 3. An analysis was made for general impurities. 4. The amount of moisture in the air, as indicated by the readings of wet and dry bulb thermometers, was determined: (*a*) in the corridor or inlet to the rooms; and (*b*) in the rooms under test. 5. The presence or absence of smell from the stoves was noted. 6. Musk plants were placed in each room and the effect of the stoves upon them was noted. 7. The ventilating effect of the stoves as ascertained by the smoke test was ascertained.

The gas supplied was as nearly as possible of the following composition:

Constituents.	Volume.
Carbon dioxide	1·50
Oxygen	0·28
Hydrocarbons (absorbed by fuming sulphuric acid)	4·64
Hydrogen	43·38
Carbon monoxide	15·62
Marsh gas	29·29
Nitrogen	5·31
Total	100·00

The calorific value was 530 or 540 net, in British thermal units per cubic foot of gas.

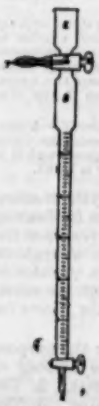
The following is a description of the methods and apparatus employed in carrying out the tests.

Carbon dioxide in flue gases.—In the sheet-iron flue of the stoves, and about a foot above the elbow, the examiners had a small brass cock fixed, and attached to this cock was a pipe passing transversely across the flue and closed at the other end. This pipe was perforated throughout its length and served the purpose of allowing samples of the flue gases to be drawn off as required.

ANALYSIS OF FLUE GASES FOR CARBON DIOXIDE.

For this purpose an ordinary Bunte's burette was used, graduated from 15 to 0 and 0 to 45 cubic centimetres and containing 100 cubic centimetres above the 0. (See Fig. 1.) At the bottom of this burette is a tap L and above the bulb is another (R); above the tap R is a funnel having marks at 20 and 25 cubic centimetres. The tap R is perforated longitudinally by a hole T as well as by the ordinary cross hole, so that the funnel can be made to communicate with the bulb B or with the air through T at will. The method of using this was as follows. A saturated solution of common salt in water was prepared; this was acidulated with hydrochloric acid and coloured pink with methyl orange; the latter is a good safeguard, as it becomes yellow if the solution becomes alkaline. This solution was kept in a bottle of about two pints capacity. A piece of stout rubber pressure tube of about one-eighth inch bore and four feet long was attached to a piece of glass tube, the glass tube was placed in the bottle containing the salt solution, and by sucking the tube it was filled with salt solution; then the free end was pushed on to the burette at K, and by lifting the bottle of solution the burette was filled with it, the cock R being turned so as to put the bulb in communication with the funnel; this was also allowed to fill up to the 25 cubic centimetre mark on the funnel, when the tap L was closed. The burette was now full of pink solution and the funnel K full up to the 25 cubic centimetre mark. In order to take the sample the burette, tube, and bottle were brought to the stove; a rubber tube was fixed on the sampling cock in the flue and the gases were pumped through it to fill the tube, either by an ordinary rubber syringe or by sucking the end. The free end was next fixed over T and the tap R turned so that B communicated with T; then by opening L the solution ran out and gases were drawn in through T. When the level of the solution reached about the five cubic centimetre mark below the 0, the taps L and R were closed, the burette was fixed in a stand, and the bottle W was raised until, on opening the tap L, the liquid rose to 0 on the burette; L was then closed, the bottle was lowered, and the tube was disconnected from the burette. The burette was next removed from its stand and water was poured over the bulb B for about a minute, and then the tap R was turned so as to allow the surplus gas to bubble out through K, until no more would come. There were now 100 cubic centimetres of gas in the burette under a pressure due to the head in the funnel and at the temperature of the water poured over it. The burette was next clipped in its stand and a piece of rubber tubing about two feet long was slipped on K; by sucking this tube and then pinching it, on opening L a little fluid was drawn out into the tube; L was then closed, the tube was removed, and on dipping K into a solution of caustic potash (KOH), 1 in 2, on again opening L a little was drawn into the burette. L was then closed and the burette removed from its stand and shaken for about a minute, the carbon dioxide being thus absorbed by the caustic potash, forming a carbonate. The burette was then cooled by a stream of water as before; R was opened to allow the fluid in the funnel to flow into the bulb until, its level being kept at the 25 mark, no more would run in. The burette being placed in its stand and a minute or so allowed for the fluid to run down, the percentage of contraction was read directly.

FIG. 1.



Bunte's burette.

ANALYSIS OF THE AIR OF THE ROOM FOR CARBON DIOXIDE.

The apparatus used for this was Lunge and Zeckendorf's, which was very rapid and satisfactory. It consists of a bottle of capacity of about 150 cubic centimetres closed by a rubber cork (Fig. 2), perforated for two glass tubes, one reaching just inside the cork and the other to the bottom of the bottle. The air to be tested is blown through a solution of sodium carbonate coloured red by phenolphthalin, by means of a rubber ball which, on being compressed slowly, causes a measured quantity of air to bubble through the liquid in the bottle. The number of compressions necessary to discharge the red colour give, by means of a specially prepared table, the amount of carbon dioxide in the air. The bottle is shaken thoroughly for about a minute after each pressure of the bulb and during this the light is excluded by a cloth. The presence of carbon dioxide in the air of a room even in large quantities does not appear to be directly harmful itself, if the oxygen is in proper quantity; 6 parts in 10,000 are usually regarded as the limit consistent with health and 10 in 10,000 as injurious when the gas is a product of respiration; in this case it is not itself the injurious agent but is regarded as an index of the amount of impurities of an organic nature which are extremely injurious. This is an important point in the consideration of flueless stoves. Regnault and Reiset have shown that animals can live in an atmosphere of 25 per cent. of carbon dioxide and from 30 to 40 per cent. of oxygen and nitrogen. It has been generally held that carbon dioxide up to 20 parts in 10,000 is in itself harmless. A high percentage will, however, increase the rapidity of respiration and consequently the rapidity of absorption of other poisons, such as carbon monoxide. As the excretion of carbon dioxide from the blood cannot take place if the tension of that gas in the atmosphere exceeds its tension in the blood, there is thus a limit to the amount of carbon dioxide which may exist in the air and permit of its removal from the blood; beyond this limit the red corpuscles retain the carbon dioxide and death occurs from asphyxia.

FIG. 2.

Bottle for testing for carbon monoxide.

ANALYSIS OF THE AIR OF THE ROOM FOR CARBON MONOXIDE.

To detect carbon monoxide the haemoglobin test was used, and for quantitative estimation Dr. J. S. Haldane's method was applied. In this test the estimation of carbon monoxide depends upon the intensity of the pink tint produced in diluted blood on shaking it up with air containing carbon monoxide. To get accurate results by this method, the pink tint of the blood is brought up to the same intensity as that of dilute blood which has been saturated with carbon monoxide, a pink solution of carmine of known strength being used for this purpose. The solutions are prepared as follows.

The blood solution.—This is prepared by diluting defibrinated blood with water in the proportion of 1 to 100. Or by diluting blood drawn by pricking the finger in the proportion of one drop to ten cubic centimetres of water. The defibrinated blood will keep for some time, but the diluted solution must be made freshly each day.

Carmine solution.—One gramme of pure carmine is mixed in a mortar with a few drops of ammonia solution, and then 100 cubic centimetres of glycerine are added. This strong solution is preserved in a stoppered bottle. The dilute solution for use in the test is prepared by adding five cubic centimetres of the strong solution to 500 cubic centimetres of water. This must be preserved from the light and will keep thus for some time.

For the test, a bottle holding about 200 cubic centimetres is provided, with a rubber cork perforated by two holes, one of which has a glass tube projecting to the bottom, and the other a tube projecting just inside the cork (Fig. 2); these tubes are closed by short pieces of rubber tube and glass rod stoppers. The bottle is filled with the air to be tested by sucking air out through *a* or pumping it in through *b* until two or three litres are passed through, when the tubes are closed; five cubic centimetres of the diluted blood solution are next introduced into the bottle by means of a pipette through one of the tubes; this can be done by inserting the point of the pipette into the rubber tube and pinching the other tube upon the stopper to allow some air to escape and the blood solution to run in. The stopper is replaced quickly after removing the pipette, and the bottle is covered by a cloth to keep out the light. It is then shaken quietly for ten minutes, and the blood solution is removed by a pipette and placed in a test tube half an inch in diameter; this tube is labeled (1). Into a second tube of the same size five cubic centimetres of the original blood solution are put by the pipette, this tube being labeled (2). Into a third tube of the same size are put five cubic centimetres of blood solution which has been saturated with carbon monoxide by shaking for two or three minutes in a bottle filled with coal gas. The tints of the three tubes are now compared by looking across them at a white surface lighted by daylight. No. (1) will show a pink tint if more than 0·01 per cent. of carbon monoxide was present in the air tested, and if over 3 per cent. was present it will be of the same colour as No. (3). The percentage of carbon monoxide may be measured by adding the carmine solution from a graduated burette to tube No. (2) until the pink tint is the same as that of No. (1), noting the amount added; more carmine is then added until the pink tint of No. (2)

becomes the same as that of No. (3) and the amount is again noted. From these the percentage saturation of the blood can be calculated, and the percentage of carbon monoxide in the air tested.

The results of the above test will be vitiated if the percentage of oxygen in the air is much reduced. In this case the indicated results will be too high. The method is very suitable for small percentages of carbon monoxide between 0·01 and 0·12 per cent. and is not quite so accurate up to 0·70 per cent., beyond which it is useless. The proportion of carbon monoxide which must exist in the air in order to produce well-marked injurious results is as follows: 0·05 per cent. produces slight symptoms during exertion; 0·2 per cent. is dangerous and after breathing it for some time—about an hour—the powers of exertion are impaired; and 1·3 per cent. is highly poisonous and would cause death if breathed for a long time.

The symptoms of carbon monoxide poisoning are fulness and giddiness in the head, palpitation, impairment of the senses, and loss of power in the limbs. These do not necessarily appear in the early stages, especially if the person is at rest, but are developed by exertion. They are due to the displacement of oxygen from the blood by the absorption of the carbon monoxide. An excess of carbon dioxide in the air amounting to about 3 per cent. increases the rapidity of breathing and therefore the rapidity of absorption of carbon monoxide, if present.

Humidity test.—The effect of heating apparatus upon the humidity of the air heated is most important. The amount of aqueous vapour which a given volume of air can take up and hold in solution depends upon its temperature; the higher the temperature the greater is the amount which it can hold. Each increase of 15° C. doubles the capacity of the air for holding water. When air contains all the water it can hold, it is said to be saturated. The air usually contains about from 60 to 70 per cent. of the amount required to saturate it, and this percentage is called the relative humidity. If the water vapour is present to near saturation point, it gives rise to discomfort, whatever the temperature, as evaporation from the body is hindered and the perspiration stays on the skin, which becomes "sticky." If there are a low humidity and a high temperature, evaporation goes on unchecked, hence dry heat is much more healthy than moist heat and more bearable. In these tests the relative humidity was obtained from the readings of wet and dry bulb thermometers which were placed in the rooms and corridor and were read every half hour.

TEST FOR IMPURITIES OTHER THAN CARBON MONOXIDE AND CARBON DIOXIDE, SUCH AS SULPHUR, UNBURNT HYDROCARBONS, ACETYLENE, ETC.

For this purpose the potassium permanganate test introduced by Dr. R. Angus Smith,[1] as modified by Mr. Jones of Manchester was used. This test depends upon the fact that a solution of potassium permanganate, if exposed to the action of such impurities as above mentioned, will have some of the permanganate reduced and the amount which is thus reduced, when determined, will enable a comparison to be made as to the relative amount of impurities in the different samples of air. The permanganate is not reduced by carbon monoxide or carbon dioxide, but is affected by sulphur dioxide, hydrocarbons, acetylene, dust, and organic matter, the three former being the most likely impurities to be found as a result of the combustion of coal gas.

The method adopted was as follows. 20 cubic centimetres of a decinormal solution of potassium permanganate, with 20 cubic centimetres of distilled water, were placed in a shallow porcelain or glass dish and exposed to the air of the rooms on a shelf about five feet above the floor for two hours, care being taken that all the dishes were the same height above the floor and in the same relative position in the rooms. After an exposure of two hours the dishes were removed and 25 cubic centimetres of a decinormal solution of oxalic acid were added with a little dilute sulphuric acid (1 to 4) which had been given a very faint tint with permanganate to remove all traces of sulphurous acid. The temperature was then raised and as an excess of five cubic centimetres of oxalic acid solution had been added the solution soon cleared. It was then titrated back with a centinormal solution of permanganate until the rose colour persisted and the amount used was noted. If the solutions were true and the permanganate was unexposed this amount should be 50 cubic centimetres, as it would take 50 cubic centimetres of the centinormal solution to neutralise the five cubic centimetres excess of decinormal oxalic acid added. The investigators did not, however, trust to this, but they titrated an unexposed dish and noted the amount required; any excess of permanganate required to titrate back in the case of the exposed dishes over and above the amount required with the unexposed represented the amount of permanganate reduced by exposure to the air of the room. They found, however, that the results obtained were so small in all cases as to make the test somewhat unsatisfactory, and as there was a fair amount of dust in the air of the buildings, which were still in the contractors' hands, the results were thus also somewhat vitiated. As an instance of this, they exposed a dish in the corridor, outside the rooms, as a control; and another on some scaffolding in the open air. In both cases the amount of permanganate reduced was greatly in excess of that in any of the rooms, and in the latter case the dish had quite a large amount of dust in it, blown in by the wind, &c. This dust was no doubt somewhat excluded from the rooms where the stoves were being tested. Throughout this test a dish of permanganate was exposed in one of the rooms which had no stove, as a control.

Musk plant test.—At the suggestion of Mr. S. A. Vasey of THE LANCET a young musk plant was placed in each of the rooms with the stoves, as these plants are supposed to be exceptionally sensitive to any fumes or impurities given off by gas stoves. The plants were watered and were observed daily. Another plant which was placed in the control room was also observed. See observations in Tables I. and II.

Smoke test.—The estimation of carbon dioxide in the flue gases presented some sources of error as a means of arriving at the amount of air and other gases carried off by the flues and from this the ventilating effect of the stoves. The method depends upon the fact that if a certain volume of gas be burnt it will produce a known volume of carbon dioxide. The volume of gas burnt in a given time is shown by the meter and the percentage of carbon dioxide in the flue gases is obtained by analysis. It is known then that each cubic foot of flue gas contains a certain volume of carbon dioxide and from this is obtained the number of cubic feet of flue gases which must be passed to carry away the amount of carbon dioxide generated. The accuracy of this method is impaired if all the carbon dioxide generated does not pass up the flue; and, again, with very small percentages of carbon dioxide the percentage of error may be very great, as it must be remembered that the analysis has to be done on the spot and the more accurate laboratory methods cannot be used. For the above reasons the investigators did not rely much upon the carbon dioxide test, but designed what they have called the smoke test, which was really an experimental determination of the velocity in the flues. The flues were nearly all of the same height and diameter. If, then, the velocity of the current of gases passing up the flues could be found, to calculate the volume of gases passed per hour would be easy; this amount, corrected for reduction of volume on combustion and reduced to volume at 60° F. would be the amount of air drawn through the rooms. To arrive at the velocity in the flues it was concluded that the best method would be to introduce suddenly into the stove a volume of smoke produced by an explosion of a known quantity of black gunpowder and to note the time taken by it to traverse the flue to the top. As the velocity of the gases would probably be greater at the centre of the flue than at the sides it was decided to time the first and last appearance of the smoke at the top. It was found on making this test that the smoke introduced suddenly into the bottom of the flues stretched out into a long column on its way up and appeared as a stream lasting some time.

The test was carried out as follows. Small packets of gunpowder, wrapped in tissue paper and containing about 10 grains each, were prepared, the paper being twisted up into a little ball with a projecting tail of paper. The ball was placed on a loop of wire with the tail projecting and was then inserted into the top of the stove and lighted. A man, stationed at the top of the flue, was instructed to signal down the flue on the first appearance of the smoke and again on its last appearance. This he did by shouting "First" and "Last," the flue acting as a telephone, the time taken for the sound to travel down being negligible. At the flash of the powder a stop watch registering fifths of seconds was started. At the signal "First" the interval was noted and at the signal "Last" the watch was stopped. The interval of time between (*a*) the introduction of the smoke and its first appearance, and (*b*) the

[1] See Report on Mine Air, by Dr. R. Angus Smith, for Royal Commission of 1864.

TABLE I.—GIVING DETAILS OF

Name of maker and stove, with number of room.	Date of test.	Weather.	Cubic feet of gas burnt per hour during test (average).	Calorific value of gas burnt per hour during test in British thermal units.	Carbon dioxide generated per hour by each stove (in cubic feet).	Percentage (by volume) of carbon dioxide in flue gases.	Cubic feet of air passed through the room at 60° F.			Time from lighting until a fairly steady temperature was reached in the room (in hours).	Rise of temperature in degrees Fahrenheit from—		Heat (in British thermal units) given per hour to—		
							Calculated from carbon dioxide in flue gases (per hour).	Per hour, from actually observed velocity by smoke test.	Per cubic foot of gas burnt (taken from Column 6).		Inlet (corridor) to the steady temperature of the room.	The steady temperature of the room to that of the flue gases at the outlet.	Air passed through the room.	Gases passed out through the flue.	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
Main's "Whitby" 1b	18/5/06	Moderate wind; fine.	31·25	16875	18·75	0·9	2083	2802	83·2	3·5	7	26	333·5	1227·8	1
Planet Co.'s "Barless"... 2b	24/5/06	Wind fresh and gusty; fine; one shower.	55·625	30307	33·37	0·2	16685	5183	93·2	3·0	2	44	189·8	4111·8	2
Richmond's "Waverley" 2c	21/5/06	Strong and gusty wind; fine.	30·00	16200	18·00	0·7	2571	2706	90·20	1·5, rising.	7	23	346·8	1131·2	3
" "Ilford" ... 3c	"	"	23·125	12487	13·87	1·2	1156	1479	63·96	2·0, rising.	6·5	7·5	176·0	200·4	4
" "Cambridge" 4a (Condenser.)	"	"	13·00	7020	7·80	8·6 from top of stove.	—	—	—	2·0, rising.	6	—	—	—	5
Clarke's "No. 2" ... ... 5b (Syphon.)	22/5/06	Practically no wind; fine and dull.	6·50	3510	3·90	1·3 from tubes at top of stove.	—	—	—	1·0	5	—	—	—	6
" "Syphonette"... 5c	"	"	13·75	7425	8·25	1·2 from centre tube in top of stove.	—	—	—	2·0, rising slightly.	9	—	—	—	7
Davis's "Trident" ... ... 6A (First test.)	"	"	38·50	20790	23·10	0·6	3850	4586	119·35	1·5, rising.	9	43	757·1	3804·9	8
" "Albany" 7A	9/5/06	Wind fairly strong; showery.	35·625	19237	21·37	1·0	2137	1758	49·34	1·5, rising.	11	14	354·0	441·4	9
"Beaufort" 8A	"	"	29·75	16065	17·85	1·1	1623	1050	35·30	1·0, rising	12	1	230·7	18·6	10
" "D" (Ball fuel) ... 9E	"	"	47·50	25650	28·50	1·2	2375	2839	59·58	1·0, rising.	15	32	777·1	1632·9	11
Fletcher's "Jessey" ... 11B	11/5/06	Very windy, but fine.	41·875	22612	25·12	1·0	2512	3965	95·16	1·0, rising slightly.	11	32	802·6	2320·0	12
Cannon's small "Victory" 12A	"	"	27·25	14715	16·35	1·0	1635	1479	54·28	2·5, rising slightly.	8	14	216·6	372·4	13
Central room (no stove) 12B	"	"	—	—	—	—	—	—	—	—	—	—	—	—	14
Wright's "King" 13B	"	"	34·375	18562	20·62	0·8	2578	2316	67·37	2·5, rising slightly.	12	17	508·8	712·4	15
Cannon's "Grosvenor"... 14C	15/5/06	Fairly windy and fine.	37·50	20250	22·50	0·7	3214	2226	59·36	1·0	11	14	448·3	561·9	16
Davis's "Kent" 15A	"	"	35·00	18900	21·00	0·7	3000	2449	70·00	1·0	10	19	448·3	843·0	17
Cannon's large "Victory" 18A	17/5/06	Slight wind; fine.	66·25	35775	39·75	1·4	2839	3072	46·37	2·5, rising.	23	39	1293·6	2144·9	18
" "Iris" 20A	"	"	36·875	19912	22·12	0·4	5530	2549	69·12	1·5, rising.	15	18	700·0	830·1	1
Main's "Chelsea" 21A	"	"	34·625	18697	20·77	1·0	2077	2331	81·76	2·0, rising	12	15	622·0	770·7	20
Richmond's "Royal Sovereign." 22A	18/5/06	Moderate wind; fine.	38·50	20790	23·10	0·7	3300	3175	82·47	1·5, rising.	11	29	639·4	1671·0	21
Wilson's "Delphi"... ... 24B	"	"	25·625	13837	15·37	0·5	3074	2560	100·68	2·0, rising slightly.	7·5	15	354·3	704·5	22
Planet's "Uranus"... ... 25A	24/5/06	Wind fresh and gusty; fine; one shower.	31·875	17212	19·12	0·5	3824	2916	91·48	4·5	2	27	108·8	1431·0	23
Davis's "Trident"... ... 6A (New stove.)	25/5/06	Strong wind; slight rain.	27·875	15052	16·72	0·4	4170	4723	169·43	1·0, rising slightly.	3	40	259·4	3459·0	24
" "D" (Ball fuel)... 16A (New stove.)	31/5/06	Wind moderate; fine.	50·00	27000	30·00	0·9	3333	3987	79·76	2·0, rising	12	39	375·9	2320·2	25
Wilson's "Delphi"... ... 27a (New stove.)	6/6/06	Light wind; very fine.	27·50	14850	16·50	1·0	1650	2584	91·78	3·5, rising slightly.	4	18	184·6	826·1	26
Fletcher's "India"... ... 27a	15/5/06	Fairly windy and fine.	38·75	22925	23·25	0·5	4650	2747	71·92	0·5, steady.	10	24	510·2	1211·0	27
Cannon's "Edward VII." 22a (Condensing radiator.)	6/6/06	Light wind; very fine.	15·625	8437	9·37	Got 0·3 in air between radiator columns.	—	—	—	2·5, rising slightly.	6	—	—	—	28
" "Coronation" 21a (Condensing radiator.)	"	"	8·125	4388	4·87	—	—	—	—	6·5	2	—	—	—	29
Clarke's "No. 2" ... ... 5b (Syphon.)	21/5/06	Strong wind; slight rain.	7·57	4088	4·54	2·0 in centre tube in top of stove.	—	—	—	1·0, steady.	2	—	—	—	30
" "Syphonette" 5C	"	"	14·3	7722	8·58	1·1 in centre tube in top of stove.	—	—	—	2·5, steady.	4	—	—	—	31
Richmond's "Cambridge" 27A	31/5/06	Wind moderate; fine.	13·123	7087	7·87	9·0 in gas from one 1 in. tube in top; 9·2 in gas from other.	—	—	—	2·0, rising	6	—	—	—	32

A COMPLETE SERIES OF TESTS.

	Percentage of total heat of gas burnt per hour given to—			Relative humidity of—		Increase in relative humidity in the room.	Reduction in relative humidity in the room.	Carbon dioxide in parts per 10,000.			Carbon monoxide in the air of the room.	Impurities* shown by reduction of potassium permanganate after two hours' exposure (in cubic centimetres of centinormal potassium permanganate).	Smell in room.	Capacity of rooms (in cubic feet).	Cubic feet of gas burnt per hour per degree of rise in temperature Fahrenheit from inlet to room.	State of musk plants on June 1st, 1906.	Rise in degrees Fahrenheit from the steady temperature of the air in the corridor to the mean between the steady reading of the air and radiant heat thermometer in the room.	Cubic feet of gas burnt per hour per degree of rise in temperature Fahrenheit from the corridor to the room, but using for the room temperature the mean between air and radiant heat.	Cost in pence per hour per degree of rise in temperature in room from corridor, taking gas at 3s. per 1000 cubic feet. Best coal fires in last tests worked out at 0·035 pence per degree Fahrenheit of rise.
	Air passed through the room (efficiency).	Gases passed out through the flue.	Walls, &c., of the building.	Air of the room.	Corridor air.			In the outer air.	In the room (afternoon).	Difference between Columns 22 and 23, being the increase of carbon dioxide in the room.									
	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33
1	2·00	7·30	90·70	77	86	—	9	4·8	6·4	1·6	None.	1·70	None.	3954	4·46	Withering.	15·5	2·01	0·16
2	0·63	13·69	85·68	93	90	3	—	5·1	6·9	1·8	,,	1·70	,,	4416	27·81	,,	6·0	9·27	1·00
3	2·13	7·00	90·87	87	89	—	2	5·4	7·4	2·0	,,	1·70	,,	4049	4·29	Fairly healthy.	12·5	2·40	0·155
4	1·41	1·60	96·99	84	89	—	5	5·4	7·1	1·7	,,	1·50	,,	3945	5·56	Withering.	10·25	2·26	0·128
5	—	—	—	87	89	—	2	5·4	21·0	15·6	,,	0·98	Bad.	4079	2·17	Nearly dead.	8·0	1·62	0·078
6	—	—	—	83	86	—	3	6·0	15·5	9·5	,,	0·98	Slight.	3945	1·30	Fairly healthy.	5·0	1·30	0·047
7	—	—	—	87	86	1	—	6·0	18·0	12·0	,,	1·18	Strong.	4080	1·52	,,	9·5	1·45	0·054
8	3·64	17·3	79·06	81	86	—	5	5·0	8·3	2·3	Trace.	0·48	Strong and unpleasant.	4080	4·28	,,	14·0	2·75	0·154
9	1·64	2·3	95·88	81	87	—	6	4·8	8·0	3·2	None.	1·23	None.	3839	3·24	,,	19·0	1·87	0·116
10	1·43	0·11	93·46	79	87	—	8	4·8	6·9	2·1	,,	1·37	,,	3874	2·48	,,	17·0	1·75	0·075
11	3·03	6·37	90·60	76	87	—	11	4·8	6·6	1·8	,,	1·18	Slight.	3761	3·17	Dying.	21·0	2·26	0·114
12	3·55	10·26	86·19	75	88	—	11	4·9	6·4	1·5	,,	1·18	Very slight.	3871	3·61	Fairly healthy.	21·0	2·00	0·137
13	1·47	2·53	96·01	81	86	—	5	4·9	5·4	0·5	,,	0·48	,,	3974	3·406	—	14·0	1·96	0·122
14	—	—	—	—	—	—	—	4·9	6·6	1·7	,,	0·79	—	—	—	Healthy.	—	—	—
15	2·74	3·84	93·42	78	88	—	8	4·9	7·7	2·8	,,	0·98	Slight.	3971	2·86	Dying.	18·5	1·86	0·103
16	2·22	2·77	95·01	78	80	—	2	5·1	6·4	1·3	,,	1·18	,,	4216	3·41	,,	17·5	2·14	0·122
17	2·37	4·46	93·17	78	80	—	2	5·1	5·6	0·5	,,	1·70	,,	4084	3·50	,,	12·0	2·92	0·126
18	3·61	6·0	90·39	84	86	—	2	4·9	6·6	1·7	,,	1·60	None.	3938	2·880	Nearly dead.	30·5	2·17	0·104
19	3·52	4·17	92·31	78	86	—	8	4·9	6·6	1·7	,,	1·50	,,	3983	2·46	Dying.	24·0	1·54	0·083
20	3·32	4·12	92·56	81	86	—	5	4·9	6·4	1·5	,,	1·50	,,	3971	2·685	Fairly healthy.	17·5	1·98	0·104
21	3·07	3·01	93·89	81	89	—	8	4·8	6·0	1·2	,,	2·00	,,	4014	3·60	Dying.	14·0	2·75	0·126
22	2·56	5·09	92·35	84	86	—	2	4·8	6·6	1·8	,,	1·70	Slight.	4170	3·42	Withering.	13·75	1·86	0·123
23	0·62	8·32	91·06	90	87	3	—	5·1	6·6	1·5	,,	1·80	—	4394	15·94	Withering (not very bad).	9·0	3·54	0·574
24	1·72	22·98	75·30	75	78 (in 18A no stove).	—	3	5·3	6·6	1·3	,,	2·06	None.	4080	9·29	—	7·0	3·98	0·334
25	3·24	10·44	86·32	81	87	—	6	5·8	8·0	2·2	Trace.	1·17	Very slight.	4084	4·17	—	—	—	0·150
26	1·24	5·57	93·19	81	75	6	—	6·2	6·6	0·4	None.	1·47	,,	4045	6·88	—	13·0	2·11	0·248
27	2·44	5·79	91·77	78	80	—	2	5·1	5·6	0·5	,,	1·10	None.	,,	3·87	Dying.	21·0	1·84	0·139
28	—	—	—	84	75	9	—	6·2	30·0	23·8	0·012% in mid-room. 0·03% over hood.	1·96	Very bad.	4014	2·60	—	11·0	1·42	0·093
29	—	—	—	87	75	12	—	6·2	21·0	14·8	None.	1·37	Fairly strong (varnish).	3971	4·06	—	2·0	4·06	0·146
30	—	—	—	78	78 (in 18A no stove).	—	—	5·3	8·3	3·0	,,	1·67	Slight.	3945	3·78	—	3·0	2·52	0·136
31	—	—	—	87	78 (in 18A no stove).	9	—	5·3	8·0	2·7	,,	1·77	,,	4080	3·57	—	6·5	2·20	0·123
32	—	—	—	84	87	—	3	5·8	Over 30·0	Over 24·2	,,	1·96	Strong (varnish).	4045	2·19	—	—	—	0·073

* Such as sulphur dioxide, unburnt gas, acetylene, &c.

introduction of the smoke and its last appearance was thus obtained. In calculating the volume of gases passed through the flues the average of these two was used as the mean time. It was found that the results obtained were remarkably uniform in the same stove, several consecutive trials giving almost exactly the same intervals. This was especially remarkable in the case of the first appearance, it being rather more difficult to observe when the smoke ceased to appear than when it began to appear. To determine whether the puff of the powder had any effect in accelerating the velocity of the current in the flues, the powder was ignited on the floor in front of the stove and it was found that there was no appreciable effect of this kind. These tests were also carried out in a flue which had no stove attached and some curious results were obtained. The presence or absence of a draught in this flue appeared to depend entirely on the wind; this will be referred to later. As the stoves were fixed so that no air could pass up the flue except that which had passed through the stove, the effect of opening the bottom of the main flue and admitting air around the stove flue was tried. These tests also gave some curious results, which are set out in Table III. and in Figs. 4, 5, 6, and 7.

II.—THE RESULTS OF THE TESTS, CHIEFLY IN TABULAR FORM.

The following is a description of the tables and curves accompanying this report:—

TABLE I.—*Columns 1, 2, and 3* are self-explanatory.—*Column 4* gives the total amount of heat which is produced by the combustion of the number of cubic feet of gas consumed per hour by each stove, as shown in Column 3. The heat is given in British thermal units.—*Column 5* shows the amount of carbon dioxide which is produced per hour by each stove.—*Column 6* gives the percentage by volume of carbon dioxide which was contained in the flue gases.—*Column 7* shows the calculated amount of air passed through the rooms per hour, in cubic feet as obtained from the percentage of carbon dioxide in the flue gases, as follows: Since every 100 cubic feet of flue gas contains the amount given in Column 6, and since the total carbon dioxide generated is given in Column 5, the amount shown in this column will be:

$$\frac{\text{Column 5} \times 100}{\text{Column 6}}$$

Column 8 gives the true amount of air drawn through the rooms as obtained from the actual velocity tests; the method of arriving at the final result is described in Table III. It will be seen that there is considerable discrepancy between Columns 7 and 8, which is especially noticeable where the percentage of carbon dioxide in the flue gases is very low.—*Column 9*: In order to make the results in Column 8 (which are used in the remainder of these calculations instead of those in Column 7) comparable with each other, they are here shown divided by the gas consumption of each stove in cubic feet per hour, thus bringing all stoves to a common basis—i.e., the amount of air drawn through the rooms per cubic foot of gas burnt. The amounts here shown are therefore the ventilating values of the stoves and will be seen to vary very greatly.—*Column 10* is intended to bring out the rate at which the various stoves heated the rooms, and gives the time in hours from lighting until the temperature of the rooms became steady, or nearly so. It will be seen that in few cases was an absolutely steady temperature reached. The figure is obtained from temperature curves drawn for each stove; these showed in nearly every case a quick rise for the first hour or two and then a more gradual one till the end of the test.—*Columns 11 and 12* explain themselves. It is only necessary to say that the rise of temperature is taken in every case from the curves plotted for each stove towards the end of the test, where the temperatures were fairly steady.—*Columns 13 and 14* show the amount of heat given to the air passed through the rooms and to the gases passed up the flue respectively. The figures in Column 13 are obtained by multiplying the number of cubic feet passed through the room per hour by the rise of temperature and by the specific heat of air and dividing by the number of cubic feet in one pound of air at 60° F.—i.e., 13. Thus:—

$$\frac{\text{Col. 8} \times \text{Col. 11} \times 0{\cdot}238}{13}$$

TABLE II.—GIVING PARTICULARS REGARDING EIGHT OF THE BEST STOVES TESTED.

Name of maker and stove.	Cubic feet of gas burnt per hour during test (average).	Calorific value of gas burnt per hour during the test. In British thermal units.	Cubic feet of air passed through the room reduced to 60° F. Per hour.	Cubic feet of air passed through the room reduced to 60° F. Per cubic foot of gas burnt.	Time which elapsed from lighting stove until a fairly steady temperature was reached in the room (in hours).	Rise of temperature in degrees Fahrenheit from— The inlet or corridor temperature to the steady temperature of the room.	Rise of temperature in degrees Fahrenheit from— The steady temperature of the room to that of flue gases at the outlet.	Heat in British thermal units given per hour to— The air passed through the room.	Heat in British thermal units given per hour to— Gases passed out through the flue.	Percentage of total heat of gas burnt per hour given to— The air passed through the room (*efficiency*).	Percentage of total heat of gas burnt per hour given to— Gases passed out through the flue.	Percentage of total heat of gas burnt per hour given to— The walls, &c., of the building.	Increase in carbon dioxide of the air of the room above that of the outer air (in parts per 10,000).	Carbon monoxide in the air of the room.	Impurities* shown by reduction of potassium permanganate after two hours' exposure in the room (in cubic centimetres of centinormal potassium permanganate).	Smell in room.	Capacity of the room in cubic feet.	Cubic feet of gas burnt per hour per degree of rise in temperature (Fahrenheit) from the corridor (inlet) to the room.	Condition of musk plants exposed in the rooms for same time. (Condition judged on the same day.)	Cost in pence per hour per degree of rise in temperature in room from corridor (inlet). Gas taken at 3*s.* 1*d.* per 1000 cubic feet. Best coal fires in last tests worked out at 0·088 pence per degree Fahrenheit of rise (tested in the same rooms).
Cannon Co.'s "Iris" ...	36·875	19012	2549	69·12	1·5, rising.	15	18	700·0	830·1	3·52	4·17	92·31	1·7	None.	1·50	None.	3983	2·46	Dying.	0·088
Main's "Chelsea" ...	36·625	18697	2831	81·76	2·0, rising.	12	15	622·0	770·7	3·32	4·12	92·56	1·5	,,	1·50	,,	3971	2·885	Fairly healthy.	0·104
Cannon Co.'s "Victory" (Large)	66·25	35775	3012	46·37	2·5, rising.	23	39	1293·6	2144·9	3·61	6·0	90·39	1·7	,,	1·60	,,	3938	2·880	Nearly dead.	0·104
Richmond's "Royal Sovereign"	38·30	20790	3175	82·47	1·5, rising.	11	29	639·4	1671·0	3·07	8·04	88·89	1·2	,,	2·00	,,	4014	3·50	Dying.	0·126
Fletcher's "India" ...	38·75	20925	2787	71·92	0·5, steady.	10	24	510·2	1211·0	2·44	5·79	91·77	0·5	,,	1·30	,,	4045	3·87	,,	0·139
Davis's "Beaufort" ...	29·75	16065	1050	35·30	1·0, rising.	12	1	230·7	18·6	1·43	0·11	98·46	2·1	,,	1·37	,,	3874	2·43	Fairly healthy.	0·075
,, "Albany" ...	35·625	19237	1758	49·34	1·5, rising.	11	14	354·0	441·4	1·84	2·3	95·86	3·2	,,	1·28	,,	3889	3·24	,,	0·116
Richmond's "Ilford" ...	23·125	12487	1479	63·98	2·0, rising.	6·5	7·5	176·0	200·4	1·41	1·60	96·99	1·7	,,	1·50	,,	3945	3·56	Withering.	0·128

* Such as sulphur dioxide, unburnt gas, acetylene, &c.

The figures in Column 14 are obtained for the flue in a similar way, only 0·24 is used as the specific heat instead of 0·238.—*Columns 15, 16, and 17* represent respectively the percentage of the total heat of the gas burnt per hour, which is given to (*a*) the air passed through the room, (*b*) the gases passed out by the flue, and (*c*) the walls, &c., of the building. Column 15 is important as it shows the efficiency of the stoves. It is, however, calculated from, and depends upon, the amount of air passed through the rooms per hour. It also assumes a thorough and uniform heating of all the air in the room; and, as strictly speaking this does not take place, the figures in this column, although very valuable, must be considered in conjunction with others in deciding which is the best stove. The only true loss of heat appears to be the percentage shown in Column 16, and even this is doing useful work in ventilating the room. The percentage in Column 17 is also doing useful work heating and drying the building.—*Columns 18, 19, 20, and 21* explain themselves. —*Columns 22, 23, and 24* relate to the carbon dioxide in the room air, Column 24 being the most important. With few exceptions the increase shown here can be quite accounted for by the products of respiration of men going in and out of the rooms, attending to the stoves, &c.—

TABLE III.—This table shows the results of the smoke, or velocity, tests. Most of the tests here recorded were made on the same day, as it happened to be almost dead calm and therefore the wind was not a disturbing factor. *Columns 1 to 8* are self-explanatory.—*Column 9* gives the cubic contents of the whole flue from the stove to the outlet in feet. This was therefore the amount of gases passed during the period taken for a particle to travel from top to bottom.—*Column 10* explains itself.—*Column 11* shows the mean time taken for a particle to pass up the flue. The time is given in fifths of seconds, as this was the simplest, and there was no object in bringing it to seconds.—*Columns 12 and 13* show the number of cubic feet of gases passed per hour up the flue at flue temperature and reduced to 60° obtained from the formula:—

$$\frac{3600 \times 5 \times \text{Col. 9.}}{\text{Col. 11.}}$$

—*Column 14* shows the number of cubic feet of gases passed up the flue per cubic foot of gas burnt.—*Columns 15, 16, and 17* explain themselves.

TABLE III.—GIVING THE RESULTS OF THE SMOKE, OR VELOCITY, TESTS.

Name of maker and stove.	Number of room.	Date of test with smoke.	Wind.	Diameter of the stove flue (in inches).	Length of flue fixed to stove and projecting through plate into the main flue (in feet).	Diameter of the main flue (in inches).	Height of the main flue above the stove flue (in feet).	Total height of the flues from the stove to the outlet (in feet).	Contents of the flues in cubic feet.	Cubic feet of gas burnt per hour during the test.	Mean time of transit of a particle of air from the bottom to the top of the flue (in fifths of seconds).	Cubic feet of gases passed up the flue. Per hour. At the temperature of the flue.	Per hour. Reduced to 60° F.	Per cubic foot of gas burnt. Reduced to 60° F.	Temperature of the flue gases at the outlet at the time of the test (in degrees Fahrenheit).	Heat lost in the flue gases per hour (in British thermal units).	Percentage of total heat of gas burnt lost in the flue gases.
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Main's "Whitby"... ...	1b	22/5/06	No wind.	2½	4	9	64	68	28·54	31·25	192	2676	2568	81·2	84	1227·8	7·30
Planet Co.'s "Barless"	2B	,,	,,	—*	—	,,	68	,,	30	55·625	97	5567	5105	91·6	107	4111·8	13·69
Richmond's "Waverley"	2C	,,	,,	3½	4	,,	64	,,	28·54	30·00	185	2777	2664	88·8	82	1131·2	7·00
,, "Ilford" ...	3a	,,	,,	3	4	,,	64	,,	28·47	23·125	350	1464	1447	62·6	66	200·4	1·60
Davis's "Trident" ...	6a	,,	,,	4	4	,,	64	,,	28·63	38·50	105	4908	4541	118·0	102	3604·9	17·30
,, "Albany" ...	7a	,,	,,	4	2	,,	66	,,	29·34	35·625	295	1790	1708	48·0	85	441·4	2·30
,, "Beaufort" ...	8a	,,	,,	4	2	,,	66	,,	,,	29·75	512	1031	1008	34·0	72	18·6	0·11
,, "D" (Ball fuel)	9B	,,	,,	3	4	,,	64	,,	28·47	47·50	170	3014	2764	58·2	107	1632·9	6·37
Fletcher's "Jersey" ...	11B	,,	,,	4	3	,,	65	,,	28·98	41·875	124	4207	3927	93·8	97	2320·0	10·28
Cannon's "Victory" (small)	12A	,,	,,	3	4	,,	64	,,	28·47	27·25	345	1485	1441	52·9	76	372·4	2·53
No stove	12B	,,	,,	—	—	,,	68	,,	30	—	—†	—	—	—	—	—	—
Wright's "King"... ...	13B	,,	,,	3	3	,,	65	,,	28·86	34·375	220	2369	2270	66·0	83	712·4	3·84
Cannon's "Grosvenor"	14	,,	,,	3½	3	,,	65	,,	28·91	37·50	230	2282	2174	58·0	81	561·9	2·77
Fletcher's "India" ...	27a	,,	,,	3½	3	,,	65	,,	28·91	38·75	180	2891	2733	70·5	90	1211·0	5·79
Davis's "Kent"	16	,,	,,	4	2	,,	66	,,	29·34	35·00	210	2515	2400	68·6	85	842·0	4·48
Cannon's "Victory" (large)	18	,,	,,	3½	4	,,	64	,,	28·54	66·25	157	3272	2979	45·0	111‡	2144·9	6·00
Cannon's "Iris"	20	,,	,,	3½	4	,,	64	,,	28·50	36·875	197	2604	2498	67·7	82	830·1	4·17
Main's "Chelsea"... ...	21	,,	,,	3½	7	,,	61	,,	27·42	34·625	172	2869	2783	80·4	76	770·7	4·12
Richmond's "Royal Sovereign"	22	,,	,,	4	6	,,	62	,,	27·93	38·50	152	3307	3121	81·1	91	1671·0	8·04
Wilson's "Delpht" ...	24	,,	,,	3½	4	,,	64	,,	28·54	25·625	197	2608	2544	99·3	73	704·5	5·09
Planet Co.'s "Uranus"	25	,,	,,	4	4	,,	64	,,	28·63	31·875	170	3031	2871	90·0	89	1431·0	8·32
Davis's "Trident" (new stove)	6A	25/5/06	Slight wind	4	4	,,	64	,,	,,	27·875	102	5052	4684	168·0	101	3459·0	22·98
Davis's "D" (Ball fuel) (new stove)	16	31/5/06	,,	4	4	,,	64	,,	,,	50·00	120	4294	3917	78·3	110	2320·2	10·44
Wilson's "Delpht" (new stove)	27a	6/6/06	—	3½	4	,,	64	,,	28·54	27·50	200	2577	2488	90·4	79	828·1	5·57

* Fixed in the wall; no stove flue. † No draught. ‡ Fire and flue, reduced slightly.

Columns 25, 26, 27, and 28 explain themselves.—*Column 29* gives another basis of comparison for the stoves and is the number of cubic feet of gas burnt for every degree Fahrenheit of rise in temperature from the corridor or inlet to the room.—*Column 30* shows the effect upon the musk plants. Their state does not show any relation to carbon dioxide, smell, or other impurities. High temperature appears to have the greatest effect.—*Column 31* gives the rise in temperature from corridor to room, taking for the latter the mean between the air and radiation thermometers.—*Column 32* is similar to Column 29 but the rise shown in Column 31 is taken as a basis of calculation instead of that in Column 11.—*Column 33* shows the cost in pence per hour for every degree of rise in temperature from the corridor to the room and is obtained from Column 29. Gas is taken at 3*s.* per 100 cubic feet.

TABLE II.—This table is taken from that just described. It shows eight of the best stoves tested and the columns of importance transferred from Table I.

TABLE IV.—This table shows the results of some special smoke tests carried out to determine the influence of different arrangements of flue upon the draught. It also brings out the curious effect of the wind. The columns are self-explanatory, but the following is a description of the various conditions of working under which the stoves were tested.

The first four tests were made on the same stove but on different days and under different conditions of weather. The next five tests were of a flue which had no stove fitted but was open to the room. The object was to determine the effect of the wind, and it will be seen that while it governed the amount of draught in the stoveless flue it had little or no effect on the draught in the flue which had the stove fitted. The next is a test of a stove under ordinary conditions, having no opening for admitting air to the main flue except through the stove. The next shows the same stove with the plate closing the main flue removed, admitting an induced draught round the stove flue.

The two following tests are similar to these, as are also the four last. These all bring out clearly the enormous difference made by opening the main flue at the bottom.

The group of tests on Fletcher's "Jersey" stove were directed towards determining the effect of different lengths of stove flue and also of different types of cowl. The conditions were as follows. The stove was first tested with a 4-inch iron flue all through the main flue from stove to outlet, there being no draught through the main flue. The bottom and top plates were next removed, thus admitting a draught to pass up outside of the stove flue, and the velocity was tested in the stove flue as before to try if the cooling effect of the outside draught had any influence upon that in the stove flue. The velocity of the draught in the main flue was next tested under the same conditions. The stove was then turned out and the 4-inch pipe was removed from the main flue, a short length substituted projecting two feet into the main flue only, so that the air was admitted both through the stove and around its flue. Under these conditions the velocity was tested. The bottom plate closing the main flue around the stove flue was then replaced, stopping the draught around the stove flue, and the velocity was again tested. Following these, four different types of cowl were fitted and each was tested.

The last column of the table shows the final results of the above tests and the effect of the different conditions.

The results would have been of more value if the main flue had been higher, but this could not be altered and no other flue was suitable for the purpose.

III.—A GENERAL CONSIDERATION OF THE RESULTS OF THE TESTS AND A COMPARISON BETWEEN GAS AND COAL FIRES.

The consideration of the results of the tests.—When the stoves were tested with the bottom of the main flue opened a very great increase in the velocity of the flue gases invariably was found. The curves (Figs. 4, 5, 6, and 7) show this clearly. The heavy black line indicates volume of gases in cubic feet passed up flue per hour. It will be noticed from these curves that, although the volume of air drawn through the room was increased four or six times by admitting air beside the stove flue, there was in no case any noticeable effect upon the temperature of the room. The flue temperatures, which were taken every half hour, also behaved in a curious way. In two of the four stoves thus tested the flue temperature dropped on the admission of cold air to the flue, while in the other two the temperature of the flue gases rose on the removal of the bottom plate closing the main flue. An examination of the curves and tables will show that the two stoves which had high flue velocities lowered their flue temperatures at the top on admitting more air, whereas the two with low flue velocities increased their flue temperatures at the top. Keeping in view the fact that as the flue gases pass upwards they lose their heat to the sides of the flue and the quicker the passage up the less heat will they lose; and also the fact that the effect of admitting cold air to the flue, *if the velocity of the current is not increased*, must be to lower the temperature at the outlet; it will be seen that in these cases we have a combination of both factors, the velocity being increased *and* cold air being admitted. The explanation is probably that in one case the rise of temperature owing to the quick passage through the flue was greater than the loss by the admission of the large volume of cold air, owing to the shorter time of exposure to the cold sides of the flue. In the other case the opposite held good, the reduction of temperature owing to the admixture of cold air not being balanced by the advantage of the quick passage.

As to the effect of the wind on the draught, Table IV. shows that the wind had little or no effect in increasing the draught of a stove, although it was most effective in producing a draught in a flue which had no stove, also the velocity of the current in the latter varied with the wind. Only one typical example of this has been given but it held good for all the stoves tested—there was never any marked difference in the velocity of the draught, although the wind varied very greatly in velocity on different days.

Another point which was investigated was the rate of growth of the velocity of the flue current. It was found that the velocity went on gradually increasing for about one and a half to two hours after lighting the stove, when it attained a fairly steady value, only increasing very slowly after this. This slow increase was no doubt due to the warming of the flue and it coincided roughly with the rise of the flue temperature, which usually rose rapidly for about two hours, and less rapidly after that.

The number of cubic feet of air drawn through the rooms per hour is a measure of the ventilating effect of the stoves. It must, however, be remembered that although this amount of air is drawn through the room in question it does not necessarily represent efficient ventilation, as there is a tendency for a localised current to be established near the floor from the door or inlet to the stove, the surrounding air not being changed at anything like the same rate. This was demonstrated by igniting about 10 grains of black gunpowder in the middle of the room; as the smoke cleared away it was seen to linger in the parts of the room out of the direct line of this current.

Turning now to the conclusions which may be drawn from these tests they may be summed up in a few words as follows. A properly constructed gas stove, with a flue sufficiently large to carry away the products of combustion, although for constant work more costly than a coal fire, is quite as satisfactory from a hygienic point of view, and does not in any way vitiate the air of the room, nor does it produce any abnormal drying effect as is popularly supposed. It will carry off from about 2000 to 4000 cubic feet of air per hour and this is a valuable ventilating effect. Compared with open coal fires, and taking for this purpose the results of the last tests carried out in December, 1905, and January, 1906, an account of which appeared in THE LANCET of May 19th, 1906, p. 1413, the following interesting points appear. It is only in the very largest gas fires that the calorific value of the fuel burnt per hour approaches that obtained in coal fires, being in the majority of cases only about one-third. Of this calorific value a higher percentage is utilised in warming the air of the room in the best coal fires than in the gas fires, when once a steady temperature has been attained, the ratio being roughly 3 to 1 in favour of the coal fires. The percentage which is lost in the flue gases is, however, greater in the best coal than in the best gas fires. When the initial raising of the temperature of the rooms had been accomplished and the fires had produced a fairly steady rise the cost per hour for each degree of rise in temperature was about four times as great with the gas fires as with the coal. This does not necessarily mean that gas is always more costly than coal; other factors must be considered, such as the rate at which the room is warmed. It was found that while the gas fires usually produced a fairly steady temperature in the rooms in from one to two hours, the coal fires took much longer. This is in favour of the gas fires and is brought out in the curves as figured. The curve for the coal fire (Fig. 3) is from one of those tested in December and January last. It will also be noted that the curves for the gas fires are much evener and show a more steady rise; this is a result of the irregular supply of fuel to the coal fire. Another point in favour of the gas fires is that they can be easily regulated and the heat of the room controlled in a way which is not possible with coal fires.

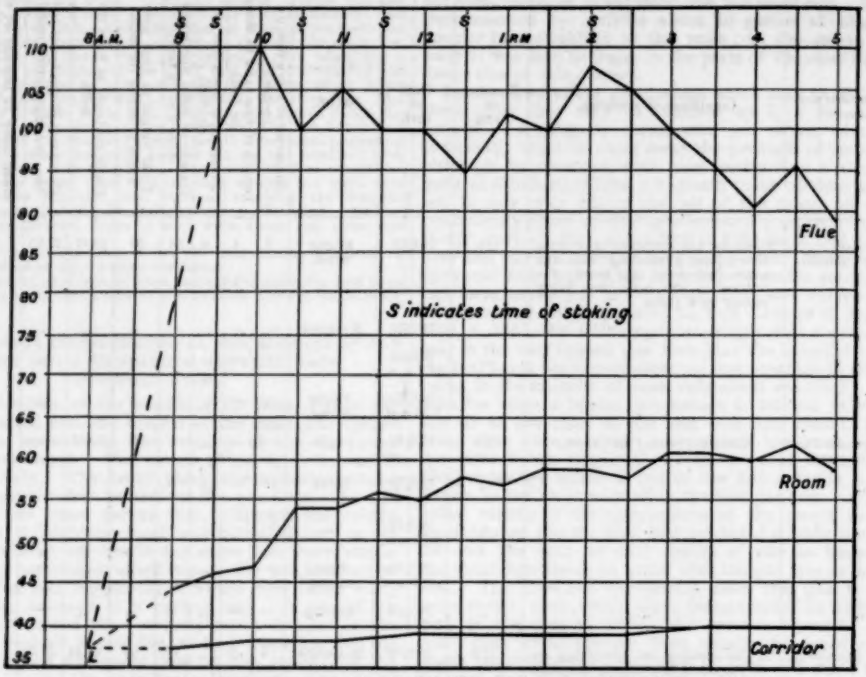
Taking into consideration the amount of coal which must be burnt before a comfortable and steady warmth is produced and also the amount which must be burnt after the fire is no longer required, the examiners think that even from the point of view of economy the gas would run the coal very closely for domestic uses, where it is seldom necessary to have a fire constantly burning for long periods. It is the lighting and letting out which make the coal fire wasteful, whereas a gas fire can be lighted and turned out as required without unnecessary waste of fuel. They are also of the opinion that a properly constructed gas fire has the advantage of a coal fire from a hygienic point of view owing to the more equable temperature and the absence of dust and smoke. The flueless condensing gas fires, while very economical of gas, pour into the room a large quantity of carbon dioxide gas. With plenty of ventilation they would be very suitable for warming rooms or passages where no flue existed to which an ordinary gas fire might be connected. These stoves make the most economical use of the gas burnt, but this is due chiefly to the absence of a flue and the consequent losses through it. When therefore such stoves are provided with sufficient ventilation to keep the air pure the heat is carried away in the air currents, and in such circumstances they would probably not be more economical than the ordinary stove provided with a flue. There is also the danger that if anything goes wrong with the flame and the combustion becomes imperfect the poisonous products will be poured into the room instead of passing up the flue as in the case of the flue stoves.

No carbon monoxide was detected in the hot air and gases coming from these stoves except in one case, and in this case the makers said that the stove was faulty and had been sent to the tests by mistake instead of to their own testing room. It shows, however, the danger of anything going wrong with

TABLE IV.—SHOWING THE RESULTS OF SOME SPECIAL SMOKE TESTS TO DETERMINE THE INFLUENCE OF DIFFERENT ARRANGEMENTS OF FLUE UPON THE DRAUGHT.

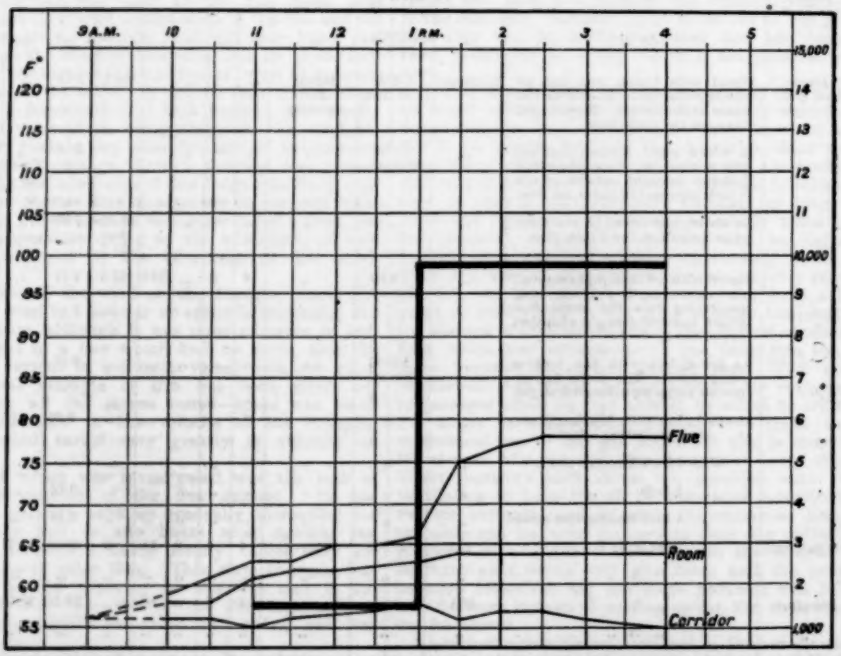
Name of maker and stove.	Condition of working.	Number of room.	Date of test.	Wind.	Diameter of stove flue (in inches).	Length of flue fixed to stove (in feet).	Diameter of main flue (in inches).	Height of main flue above stove flue (in feet).	Total height of flues from stove to outlet (in feet).	Cubic contents of flues (in feet).	Cubic feet of gas burnt per hour (averaged during tests).	Mean time of passage of air from the bottom to the top of the flue (in fifths of a second).	Cubic feet of flue gases passed per hour.
Cannon's "Victory" (small).	Fixed in the ordinary way with short pipe projecting into the main flue from the stove, the bottom of the main flue being closed by a plate.	12A	17/5/06	Slight wind.	3	4	9	64	68	28·47	27·25	336	1525
,,	,,	,,	22/5/06	No wind.	—	—	,,	—	,,	,,	,,	352	1456
,,	,,	,,	24/5/06 11.7 A.M.	,,	—	—	,,	—	,,	,,	,,	397	1291
,,	,,	,,	24/5/06 5.34 P.M.	Fairly strong.	—	—	,,	—	,,	,,	,,	320	1601
No stove; main flue open to room.	Central room, no stove.	12B	17/5/06	Slight.	—	—	,,	—	68	30·00	—	141	3830
,,	,,	,,	22/5/06	None.	—	—	,,	—	,,	,,	—	No draught.	—
,,	,,	,,	24/5/06 10.5 A.M.	,,	—	—	,,	—	,,	,,	—	,,	—
,,	,,	,,	24/5/06 11.20 A.M.	Fairly strong.	—	—	,,	—	,,	,,	—	207	2609
,,	,,	,,	24/5/06 5.35 P.M.	Strong.	—	—	,,	—	,,	,,	—	125	4320
Davis's "Beaufort," removed from 8 A.	A. No opening for admitting air to the main flue except through the stove.	11B	25/5/06 1.10 P.M.	Moderate.	4	2	,,	66	68	29·34	25·00	271	1952
,,	B. Plate closing the main flue removed admitting induced draught round the stove flue.	,,	25/5/06 1.30 P.M.	,,	,,	,,	,,	,,	,,	,,	,,	56	9431
Fletcher's "Jersey," removed from 11 B.	As A.	8A	25/5/06 1.14 P.M.	,,	4	3	,,	65	,,	28·98	42·14	130	4031
,,	As B.	,,	25/5/06 1.25 P.M.	,,	,,	,,	,,	,,	,,	,,	,,	45	11592
Fletcher's "Jersey," removed from 8 A.	Fitted with 4-inch iron flue all through the main flue from the stove to the outlet. No draught through the main flue.	Kitchen	1/6/06 11.30 A.M.	Strong and variable.	,,	—	,,	—	24·5	2·14	,,	12·5	3081
,,	In 4-inch pipe. Bottom and top plates removed, thus admitting induced draught outside of the 4-inch pipe and in the main flue.	,,	1/6/06 12 noon.	,,	,,	—	,,	—	,,	2·14	,,	12·5	3081
,,	As above, but tested in the main flue outside of the 4 inch pipe.	,,	,,	,,	,,	—	,,	—	Main flue 21 7	7·69	,,	15·0	9223
,,	Tested with a 4-inch pipe removed and short length two feet long projecting into the main flue fitted. Induced draught admitted round the stove flue.	,,	1/6/06 2 P.M.	,,	4	2	,,	21·5	23·5	9·67	,,	16·0	10891
,,	As above, but with the bottom plate closed. The main flue replaced, stopping induced draught.	,,	1/6/06 3 P.M.	,,	,,	,,	,,	,,	,,	9·67	,,	26·5	6568
,,	As above, but with 4-inch ordinary cowl projecting 1 foot.	,,	,,	,,	4	,,	,,	,,	,,	9·76	,,	47	3738
,,	With 4-inch Barker's cowl.	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	60	2928
,,	,, 3-inch ,,	,,	,,	,,	,,	,,	,,	,,	,,	9·72	,,	86	2058
,,	,, 4-inch Belchamber's cowl.	,,	,,	,,	,,	,,	,,	,,	,,	9·78	,,	55	3194
Davis's "D" (Ball fuel)	As A, 11 B.	11A	1/3/06	Strong.	4	4	9	64	8	28·63	44·71	135	3817
,,	,, B ,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	37	13928
,, Beaufort	,, A ,,	20A	,,	,,	4	2	,,	66	,,	29·34	23·14	360	1467
,, ,,	,, B ,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	54	9780

FIG. 3.



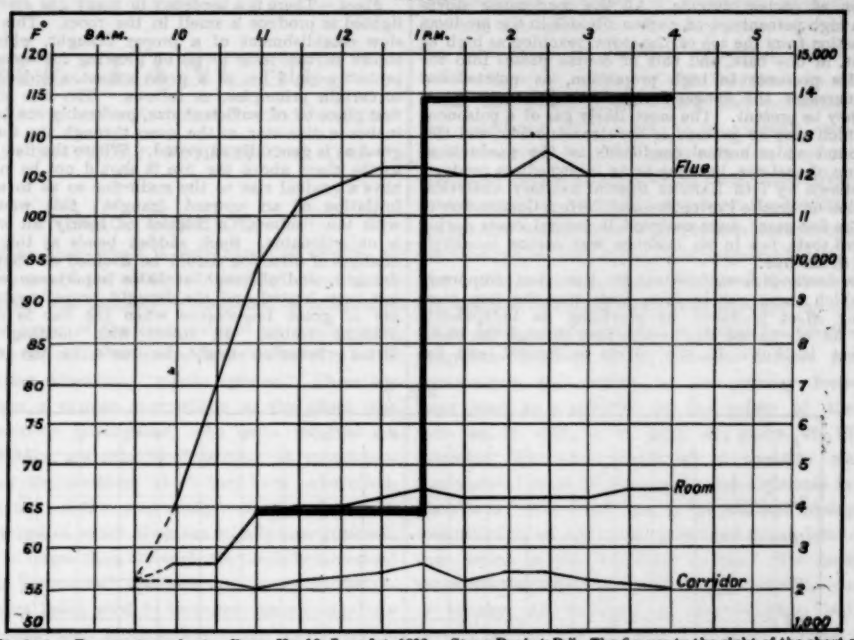
Temperature chart. Room No. 12B, Feb. 5th, 1903. Coal fire grate "Boyd's Hygiastic."

FIG. 4.



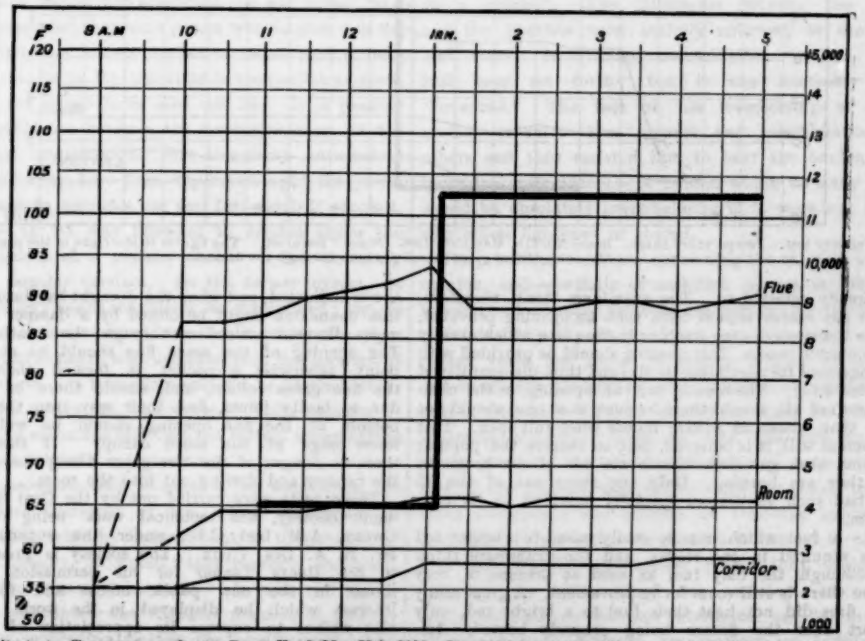
Velocity test. Temperature chart. Room No. 20, June 1st, 1906. Stove "Beaufort." The figures to the right of the chart show the cubic feet of gases passed per hour through the flue as indicated by the heavy black line.

FIG. 5.



Velocity test. Temperature chart. Room No. 16, June 1st, 1906. Stove Davis "D." The figures to the right of the chart show the cubic feet of gases passed per hour through the flue.

FIG. 6.



Velocity test. Temperature chart. Room No. 8, May 25th, 1906. Stove "Jersey." The figures to the right of the chart show the cubic feet of gases passed per hour through the flue.

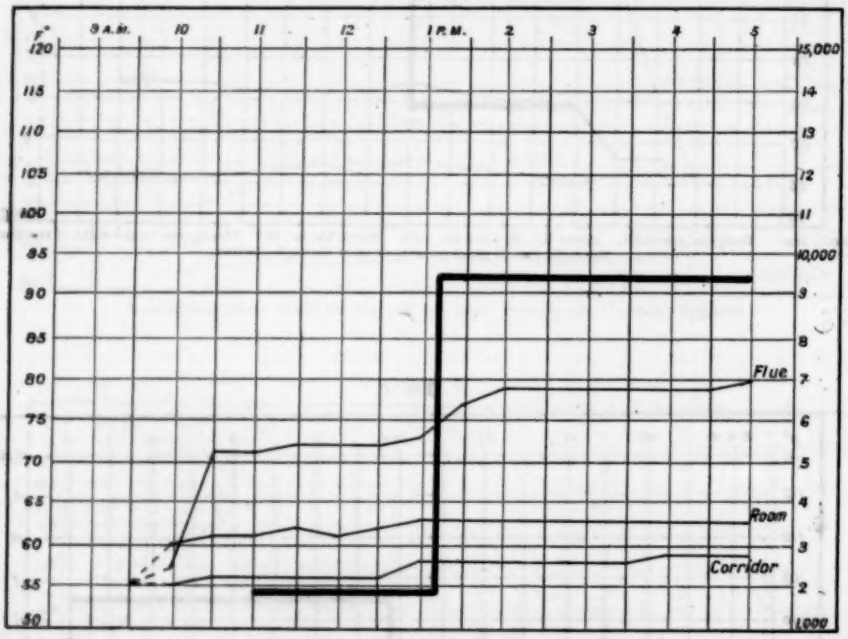
such stoves, and in this instance the carbon monoxide was easily detected in the air of the room, which also had a high proportion of carbon dioxide. All the condensing stoves showed a high percentage of carbon dioxide in the products of combustion from the top of the stove, reaching as high as 9 per cent. in one case, and this of course passes into the room. Its presence in high proportion, as pointed out before, increases the danger from other poisonous gases should they be present. The most likely gas of a poisonous nature which may be present is carbon monoxide, and this is not found under normal conditions in the products of combustion of coal gas, but may be an intermediate product, as was shown by THE LANCET Special Sanitary Analytical Commission on Smoke Prevention and Perfect Combustion of 1893. The flue gases were analysed in several cases during the present tests, but in no instance was carbon monoxide detected in the flue.

Improvements indicated.—One of the most important points which came out in these tests was the very great ventilating effect produced by providing an independent entrance for air to the flue besides that through the stove. This effect is shown in the curves as figured and has been already referred to. The examiners think, therefore, that all gas stoves should have such an opening provided, either in the stove casting itself or in the plate which usually closes the grate recess. This opening should be provided with an arrangement for regulating its size and thus the quantity of air carried away. The area of such an opening, or the combined areas of all, should there be more than one, should not be less than about 20 square inches when full open. This arrangement will, it is believed, help to remove the popular impression that gas fires vitiate the air of the rooms in which they are burning. Only one stove out of the 25 tested had such ventilators specially provided in its construction.

Fuel.—A fuel which can be easily raised to a bright red heat is required in gas stoves, and the examiners think that although the clay fuel as used at present is very effective there is still room for improvement. A great many of the fires did not heat their fuel to a bright red, only the part near the flames being properly heated. Improvement in this direction should take the form of fuel with a larger exposed surface and a greater network of interstices. It should at the same time be composed of a material which will bear a bright-red heat without injury.

Flues.—There is a tendency in many gas stoves when first lighted to produce a smell in the room. This is due to the slow establishment of a proper draught, which has been shown in the tests to go on growing for some time. This probably could be, to a great extent, avoided by attention to certain principles, as follows. The flue should in the first place be of sufficient size, preferably not less than four inches in diameter, as the losses through the flue are not so great as is generally supposed. Where the flue is connected to the stove above the fire it should not be horizontal but have a gradual rise to the main flue so as to encourage the initiation of an upward draught; this would do away with the "elbow," a feature of nearly all stoves, which is objectionable. Such sudden bends as this and sudden changes of direction should be avoided as they impede the draught, and although of little importance when the flue has been heated and the draught properly established they are of great importance when the flue is cold and the draught feeble. In stoves with heating chambers a direct connexion might be made to the main flue as above indicated, and when the draught has been established this connexion might be closed by a damper and the hot gases directed around or through the heating chamber. The opening of the stove flue should be at the highest point, otherwise a pocket is formed there in which the flue gases collect, and, should there be any leakage due to faulty joints, find their way into the room. The bottom of the flue opening should be well above the lower edge of the stove canopy. If this is not so there is danger of the flue gases filling the pocket under the canopy and flowing out into the room.

FIG. 7.



Velocity test. Temperature chart. Room No. 11B, May 25th, 1906. Stove "Beaufort." The figures to the right of the chart show the cubic feet of gases passed per hour through the flue.

These tests were carried out by the Coal Smoke Abatement Society, the technical work being done by Dr. Owens, A.M. Inst. C.E., under the superintendence of Dr. H. A. Des Vœux. The society is greatly indebted to Sir Henry Tanner for his permission to use the rooms in the new public offices and for the great interest which he displayed in the work. The society also wishes to express its appreciation of the courtesy displayed by the officials of the Gas Light and Coke Company, without whose coöperation the tests would have been impossible.

THE LANCET.

LONDON: SATURDAY, NOVEMBER 17, 1906.

Public Opinion.

THE historians upon whom it may hereafter devolve to analyse and to record the events of the beginning of the twentieth century will probably be compelled to admit that the inevitable errors of the time were in no small degree attributable to an undue estimate of the value of what is called, and often miscalled, "public opinion." There has somehow arisen a curious superstition to the effect that people of ordinary intelligence, who have received an ordinary education, are capable of arriving at sound conclusions concerning questions which they have not studied, and of which the solution may really turn upon data with the very existence of which they are wholly unacquainted. We are prone to forget that, although the partially instructed man may hold pronounced opinions upon many subjects—the word opinion being used in its proper sense to signify a conclusion resting upon grounds which are insufficient to afford certainty—yet that the insufficiency of these grounds is more likely to induce the holders of the opinions to seek refuge from their uncertainty in declamation than to aim at its removal by inquiry. On any particular topic which may be engaging attention at the time the current opinion or the opinion temporarily espoused by the majority is usually declared by that majority to constitute the *vox populi*; and then we are reminded that some person who flourished in the dark ages, and who is only known to us as having been quoted by WILLIAM OF MALMESBURY in the twelfth century, declared the *vox populi* to be also *vox Dei*. It is possible that the resemblance between the respective *voces*, in the mind of the originator of this singularly unveracious pronouncement, may have been dependent upon the power of the populace to compass the end for which it shouted, and that he in no way intended to declare either the necessary wisdom of a popular choice or the necessary rectitude of popular conduct. To the former extent, no doubt, the analogy might sometimes be maintained; but, so far as the latter is concerned, we should prefer the riper wisdom of FONTENELLE, who declared that the number of those who believe in a thing does not add to its credibility, or that of MALEBRANCHE, who wrote: "Vulgi assensus et approbatio circa materiam difficilem est certum argumentum falsitatis istius opinionis cui assentitur."

We had occasion recently to quote a few words from the brilliant lecture delivered at the Royal Institution by FARADAY in 1854, when he declared that, in the presence of the PRINCE CONSORT, he would "take courage, and speak boldly that which was upon his mind." In plain and simple language he denounced the common practice of forming hasty opinions concerning matters the conditions of which were unknown or unfamiliar, and described the methods by which the judgment might be so trained as to fulfil its high function of preserving mankind from the premature adoption of erroneous conclusions. He declared the necessity, in every case, of knowing all the conditions of matters respecting which we are called upon to judge. "To suppose," he continued, "that any would judge before they professed to know the conditions would seem to be absurd; on the other hand, to assume that the community *does wait* to know the conditions before it judges is an assumption so large that I cannot accept it. Very few search out the conditions; most are anxious to sink those which oppose their preconceptions, yet none can be left out if a right judgment is to be formed." The desire to have opinions, even on subjects of which we are ignorant, or rather the desire to adopt the opinions of others with regard to them, is probably a survival of the gregarious instinct which underlies a vast amount of organisation and which, in its primary forms, must have been as conducive to the safety of the human race as it still is to that of many of the lower animals. We once heard of a case in which the fundamental truth of the matter was expressed in its simplest form. A medical man in the Midland mining district was called to an aged coal miner and found him on a bed from which he was not likely to rise. The medical man asked whether any minister of religion had seen the patient or whether he belonged to any religious body. The patient replied that he was a Baptist. Urged by some interest in the foundations of his faith, the medical man asked why he was a Baptist. The old man at once explained that when he first came to the district the parish church was distant and the Baptist chapel near at hand. "An' yo see, Mester," he continued, "I thowt I mun be summat, or I should be thowt nowt on." There was the whole question in a nutshell. The differences between the Church and the Baptists were entirely unknown to the patient and would have been unintelligible to him if they had been set forth; but it was necessary to be "summat." The fact of his membership of a community procured him respect and consideration from others and thus assisted him to bear the burden of his individual insignificance; a burden which to many persons would be absolutely overwhelming if it were not in some way either lightened or shared.

The prevailing delusions concerning the value of unskilled opinion, and especially of unskilled opinion in relation to medical and scientific subjects, are very largely fostered and maintained by a certain section of the press, which of recent years has begun to assume a tone of authority and knowledge concerning every question submitted to the public, and, as a rule, to display an equal and impartial ignorance concerning them all. Mr. BERNARD SHAW has lately given to the world a sufficiently graphic description of the "casual staff of DICK SWIVELLERS" by whom many paragraphs and articles on scientific subjects are presumably composed. We fear he is correct in his belief that the majority of readers prefer DICK SWIVELLER, "because his high spirits are amusing, his slovenly colloquialism is familiar and intelligible, and his inveterate inaccuracy and illiteracy are matters of indifference." It was said of a politician of the last century that his self-confidence would render him equally willing to cut a

man for the stone, to attend a woman in labour, or to command the Channel Fleet; the willingness arising from the fact that, not being a surgeon, an accoucheur, or a sailor, and equally ignorant of the business of all three, he was ignorant also of the dangers against which those following any of the callings in question were expected to provide. Such is the type of scores of uneducated persons who would tranquilly instruct a physician about an epidemic or correct an astronomer about the heavenly bodies. A recent illustration of this tone and mode of thought has been furnished by press comments upon the composition of the Royal Commission on Vivisection and upon its decision to hear evidence in private; comments in which it is declared that the "public" are "the only possible judges of the issue at stake." The issue at stake is, we conceive, simply that of the conditions in which experiments upon living animals are for the future to be conducted (the prohibition of them in a civilised country being unthinkable); and the only persons capable of "judging" upon such an issue are those who possess, or are capable of acquiring, some knowledge concerning the present state of physiological inquiry in relation to the prevention and the treatment of disease and to the problems which are still pressing for solution. Persons ignorant on these points, assuming that they were empowered "to decide," would still be absolutely unable "to judge." If it be immoral, as some will have it, to occasion suffering to the lower animals, it is at least equally immoral to leave human suffering unrelieved; and the balance of judgment must necessarily incline towards the mitigation of that which is shown, by complete inquiry, to be the greater and more widely extended evil of the two. In the meanwhile we may mention that Mr. STEPHEN PAGET has just published a new edition of his useful book about "Experiments on Animals," and that it contains, among much else that is worth reading, an interesting account of the "press methods" of the several antivivisection societies whose common character is to seek money from the public for their maintenance.

Miliary Fever, or the Sweating Sickness.

RECENT events are making miliary fever a subject of topical interest. Among the plagues of the Middle Ages few are more remarkable than that of the sweating sickness, or as it was at one time generally named *sudor Anglicus*, the English sweat. The earliest recorded outbreak occurred in August of the year 1485, in the districts occupied by the mercenary troops employed by HENRY OF RICHMOND at the battle of Bosworth Field. The disease reached Oxford at the end of the month and London on Sept. 21st. Other epidemics occurred in 1506, 1517, 1528, and 1551. Outbreaks also occurred in Calais, chiefly limited to the English inhabitants. The severe character of the disease, its sudden onset, and frequent fatal issue earned for it a variety of names; for example, in the parish register of Loughborough it is referred to as "the swet called new acquaintance, alias stoupe knave and know thy master," while in France it, or a closely similar malady, was known as "trousse galant." As far as England is concerned, the epidemic of 1551 appears to be the last to have occurred. This epidemic is of interest in the fact that the disease was described and recorded by Dr. JOHANNES CAIUS in two papers—one in English, the other in Latin. A sweating disease of similar character was observed in Germany in 1652, 1802, and 1864, while outbreaks with closely similar clinical features, though less severe, have occurred in certain parts of Germany and France, being known as "la suette des Picards" or "the miliary sweat of Poitou." A severe epidemic of this character occurred in the central provinces of France in 1887 and was carefully studied by M. BROUARDEL. In an annotation in THE LANCET of Oct. 1st, 1887, p. 671, a careful account of the clinical features of the disease will be found. In the district of Montmorellon, out of a population of 13,000 there were 1700 attacked, with an average mortality of 12 per cent., though in some villages it reached as much as 33 per cent. of the persons attacked, while convalescence in most cases was liable to be slow. M. BROUARDEL organised a special medical service to disinfect the cottages and the clothes in infected areas. An outbreak of this disease has occurred in May and June of this year in the districts of Les Charentes and we publish in our Paris letter an abstract of a report on the subject presented to the Académie de Médecine by M. CHANTEMESSE, working in conjunction with M. MARCHOUX and M. HAVRY. During the space of six weeks 6000 persons were attacked, exclusively in the villages, the towns escaping. Bacteriological investigations failed to reveal the existence of any organism that could be inoculated or cultivated. It was found that the epidemic was limited and did not spread across the Charente except in the neighbourhood of the bridges. The study of the incidence of the disease showed that women were more frequently attacked than men and that the houses at the periphery of the villages were first invaded, especially the residents on the ground level of houses without wooden floors. M. CHANTEMESSE makes the suggestion that the field mice, or rather the fleas infesting them, may be the agents carrying the infection, since the districts concerned have been overrun for the past two years by field mice, while in many of the patients suffering from the disease he observed flea-bites. The suggestion is a purely theoretical one but deserves careful examination, although in the absence of any knowledge of the infective agent it must be difficult to substantiate.

A question of interest in regard to the history and origin of contagious and infectious diseases is the relation of the modern miliary fever to the mediæval sweating sickness. This aspect of the disease has been carefully and critically studied by Dr. J. F. PAYNE[1] and recently by Dr. W. H. HAMER[2] in his Milroy lectures. It is of interest in this connexion to compare the clinical characters of the two diseases. Among the most careful accounts of the sweat of Picardy are those given by M. EMILE PARMENTIER[3] and by

[1] St. Thomas's Hospital Reports for 1887. Article "Sweating Sickness," Encyclopædia Britannica.
[2] THE LANCET, March 3rd, 1906, p. 572.
[3] Revue de Médecine, September, 1887, p. 725.

M. BROUARDEL. The disease appears to be sudden in its onset with some ill-defined forerunners, such as fever, malaise, and weakness. On the second day profuse sweating occurs and is associated with the appearance of the rash, though this may be postponed to the fourth day. The tongue is furred and there is usually constipation, cough rapidly develops, and epistaxis is frequent. Some nervous symptoms are also the rule, such as restlessness, delirium, and paroxysmal dyspnœa. The eruption presents two chief features—viz., an outbreak of miliary papules subsequently becoming vesicular, and a polymorphous erythema which may become purpuric. The erythema is sometimes suggestive of measles, the more so that it first appears on the face. The sweat is in some cases fœtid, but this is stated by M. PARMENTIER to be due to lack of cleanliness. Desquamation occurs from about the tenth to the twelfth day or sometimes earlier; on the second day of desquamation a critical polyuria is observed. Convalescence is slow, while anæmia and some tremors of the face and tongue are not uncommon during this period. The mediæval sweating sickness was characterised, as described by Dr. CAIUS, by the extreme suddenness of its onset and the rapidity of its course which was sometimes only a few hours. It was also very fatal. Dr. PAYNE points out also that in the accounts extant of that disease there is no mention of the miliary eruption, but he is of opinion that the two diseases are similar if not identical. He offers the ingenious suggestion that supposing the disease to have been brought to England by the French mercenaries of RICHMOND'S army as was generally believed, the reason of its severity was the previous freedom of the English from the disease, on the analogy of the severity of the outbreak of measles in the Faröe Islands. He also refers to the great epidemic of 1528 which spread over the greater part of Europe north of the Alps, and states that France escaped. He therefore regards France as the home of the mediæval disease as of the modern form. Dr. HAMER in his interesting lectures discusses the various sweating sicknesses which have occurred in this country and surmises that the English sweating sickness came originally from the Baltic. He shows that RICHMOND'S mercenaries were probably not the source of the disease, since there is no record of their suffering from any illness when they arrived, and there is some ground for believing that the disease started before they came. Again, in the epidemic of 1528, when France is said to have escaped the English disease, an epidemic of "trousse galant" carried off a fourth part of the population in that and the following years. The origin of the disease is therefore still a matter of conjecture and its relation to the present disease remains difficult to determine, the more so because of the long interval between 1551 and the first of the outbreaks in Germany and France.

The Position of the Royal Navy Medical Service.

SIR LAMBERT ORMSBY, who is senior surgeon to the Meath Hospital, Dublin, and a past president of the Royal College of Surgeons in Ireland, delivered recently a very interesting introductory address at the opening of the winter session of that hospital. In the course of his address he sketched the history of the hospital and such of its recent developments as had occurred contemporaneously with the developments of antiseptic surgery and modern operative procedure, but appended to a speech which in other ways conformed to the established model of inaugural eloquence was a forcible indictment of the present conditions in the medical service of the Royal Navy. Sir LAMBERT ORMSBY'S strictures, which we publish this week in our Service columns, have been passed at a time when the medical profession as a whole is encouraged to believe that the Royal Navy Medical Service is in a good and improving condition, and as that is the view which, with certain reservations, we have taken in our columns we consider that we owe it to our readers to deal categorically with Sir LAMBERT ORMSBY'S complaints and in so doing we may say at once that, while allowing the considerable cogency and truth of much of what the distinguished surgeon has said, we hope to remove the sweepingly bad impression which he has conveyed. Things are neither so bad as he would have us believe nor really in other than a healthy and improving state. There are grievances some of which could be removed with ease and some with difficulty, while some perhaps will have to be endured; but the medical officer in the navy is not the bitter victim of a black fate whose picture is now presented to us. In our comments, as a matter of convenience, we have adopted the numbering of the paragraphs employed by Sir LAMBERT ORMSBY, so that the reader may find it necessary to consult the report of his speech upon p. 1396 of this issue.

We must all agree that there are defects in the Royal Navy Medical Service. The rules as to medical guard to which Sir LAMBERT ORMSBY refers in his fifth paragraph should be distinctly laid down in the KING'S Regulations and Admiralty Instructions. Again, in his next paragraph he points out how wrong it is that an Inspector-General ranking with a Rear-Admiral or a Major-General in the Army should act as adviser to a Commander in the Navy who ranks with a Lieutenant-Colonel. We are of opinion that a board of medical officers could do all that is necessary in the matter of medical service and the presence of an executive officer is not only quite unnecessary but may lead to a great waste of time. As a matter of fact, we have never heard of any executive officer attempting to overrule the decisions of his medical colleagues on a medical question and the force of Sir LAMBERT ORMSBY'S complaint rather depends on how often a case may occur in practice. Again, in the matter of the control of the sick berth staff (paragraph 4) we are in agreement with much of what Sir LAMBERT ORMSBY says. We are all aware of differences of opinion among naval medical officers of experience on this matter, but in our view the principal medical officer of a naval hospital should be empowered to award minor punishments for breaches of discipline on the part of the sick berth staff. The existing system whereby an Inspector-General of Hospitals, before he can award a well-earned punishment, has to report the offender to an executive officer at a local depôt is attended with vast unnecessary friction and waste of time. We do not, however, think that naval medical officers, however high in the Service, would much relish the increase of responsibility that would accrue to them if they had to award major punishments where imprisonment is necessary, but the matter is one upon which it is difficult for

any but senior medical officers in the navy to express a valuable opinion. If the duty were placed upon them some amendment of administrative machinery would be necessary, for it would surely be awkward to deal with these serious cases in a naval hospital; indeed, it seems to us that a small prison with cells and warders would be required, while many of the crimes for which imprisonment is necessary can only be dealt with by a court-martial.

So far we have been practically in agreement with Sir LAMBERT ORMSBY, but with the second paragraph in his indictment we cannot concur. We do not consider that a roster for foreign service is applicable to the naval medical service. Appointments must be made in this service for ascertained ability, and it is only just to the most efficient officers that they should have every opportunity of obtaining hospital appointments. Again, on the subjects of the use of boats and the allotment of cabins, mentioned in the ninth and eleventh paragraphs, we doubt whether the speaker has been quite well informed. In the matter of the use of boats the complaint formulated applies to other branches of the service besides the medical, and to alter the general system of officers going on shore for leave might cause much inconvenience. We say this knowing well how necessary it is that the dignity of the position of the naval medical officer should be guarded, but we doubt whether the naval medical officer is really considering his dignity when he finds it derogatory to go on shore with other officers of different ranks in a steam launch, where all are usually in plain clothes. When a medical officer goes on shore on duty in contradistinction to pleasure leave he has, as a rule, a special boat to himself, and if this is denied him we consider that he has a grievance, as has been pointed out by ourselves on former occasions. The allotment of cabins to naval medical officers has also been for many years a vexed question, and something ought to be inserted definitely in the KING'S Regulations and Admiralty Instructions to insure the medical officer obtaining proper quarters. We must not, however, be blind to the fact that the safety of the ship depends upon the navigating officer and the principal engineer officer having cabins conveniently situated for their duties. When the medical man has to stand aside for the good of the floating and fighting community on board it is impossible to protest against the hardship which he may have to endure. Obvious cases of unfairness to the medical officer in the matter of cabins have occurred, but we are informed that they are no longer numerous and that the Admiralty is alive to the importance of the point. With regard to the scant social and professional respect with which the medical officers in the navy, according to Sir LAMBERT ORMSBY, are treated, while we do not dispute the fact that there has occasionally been cause for complaint, we consider that the present condition of things has not been fairly represented in the inaugural address at the Meath Hospital. Sir LAMBERT ORMSBY has probably listened with a sympathetic ear to complaints which, though sometimes just, have not always been well-balanced, while the regrettable facts that a naval medical officer is not tried at court-martial by his peers, and does not receive over-generous recognition in the honours list, helps to give colour to his words. But everyone knows that the medical officer in the navy is taken by his executive colleagues largely on his own merits. He is, we are bound to believe, treated in accordance with his individual endowments, and not an officer afloat has more influence and authority than he has if he can bring the necessary qualities to his support.

Annotations.

"Ne quid nimis."

THE BIRTHDAY HONOURS.

THE names of four members of the medical profession appear in the Birthday Honours under the list of new knights—namely, Mr. John Tweedy, Professor J. W. Byers, Professor Rubert William Boyce, and Dr. C. F. Hutchinson. Sir John Tweedy, who is the immediate ex-President of the Royal College of Surgeons of England, is emeritus professor of ophthalmological medicine and surgery at University College, London, and consulting ophthalmic surgeon to University College Hospital and the Royal London Ophthalmic Hospital (Moorfields). He has written much on ophthalmological subjects and on medical history and medical education, in illustration of which themes he is able to draw upon an unusual familiarity with the classics. Mr. Tweedy's vigorous presentment in our columns of the case for the Members of the Royal College of Surgeons of England influenced opinion in the College very much, and if the agitation for reform had been carried on upon the lines which were then laid down it is our belief that the Members would have achieved their object. Sir John Byers, professor of midwifery and diseases of women in Queen's College, Belfast, has a widespread reputation for skill and learning in his art. He was honorary president of the International Congress of Obstetrics and Gynæcology held at Geneva in 1896 and president of the Obstetric and Gynæcological Section of the British Medical Association in 1901. He is an ex-President of the Ulster Medical Society and of the Belfast branch of the Irish Medical Association, and physician to the Royal Victoria Hospital, Belfast, and to the Belfast Maternity Hospital. Sir John Byers's work in Belfast has not been limited to specialised medicine; he has been an advocate of all progressive measures in public health and, as befits the son of the founder of Victoria College, a vigorous champion of the cause of education. Sir Rubert Boyce is the Holt professor of pathology in the University of Liverpool, bacteriological analyst to the city of Liverpool, and Dean of the Liverpool School of Tropical Medicine. He is a Fellow of the Royal Society. He is also the author of several medical works, notably "A Text-book of Morbid Histology" and the joint author of a "Handbook of Pathological Anatomy," and he has contributed many papers and articles to the medical press and to the transactions of various medical societies. His honour is a recognition of untiring industry and sound work, especially in connexion with the Liverpool School of Tropical Medicine which by his efforts and those of an extremely capable staff of colleagues has achieved admirable results in the short space of seven years since its foundation. Sir Charles Hutchinson, a justice of the peace for East Sussex, was late Member of Parliament for the Rye division of the county. Mr. Thomas J. Stafford, F.R.C.S. Irel., medical commissioner on the Local Government Board of Ireland, has been made a Companion of the Bath. Among the list of Companions of St. Michael and St. George are the names of Mr. Sydney Wilson Thompstone, F.R.C.S. Edin., F.R.C.P. Edin., L.F.P.S. Glasg., Principal Medical Officer of Northern Nigeria, West Africa; and Mr. Wilfred Thomason Grenfell, M.R.C.S. Eng., superintendent of the Royal National Mission

to Deep Sea Fishermen. Sir Alfred Fripp, C.B., C.V.O., surgeon-in-ordinary to the King, has been promoted to a Knight Commandership of the Royal Victorian Order; and Mr. William Maurice Abbot Anderson, M.B., B.S. Durh., M.R.C.S. Eng., surgeon to H.R.H. the Duchess of Fife and household, has been made a member of the Fourth Class of the same order. To each of these gentlemen we offer hearty congratulations.

THE STANDARDISED STAIRCASE.

A SYSTEM of standards is the order of modern life and in many directions standards are convenient if not, in some cases, indispensable. We have, for instance, standard gauges for railways and tramways, standard threads for various screws, standard sizes for boots, shoes, and gloves, standard qualities for articles of food, standard weights and measures, coinage, and so on. But there are still some directions in which the need of a standard is not only indicated but is urgent. The desirability, for example, of standardising the steps of all staircases is seen in the fact that so often a fall on the staircase is due to the irregularity in the height of the steps. A common cause of accident on the staircase is the kicking of the edge of a stair when ascending. In descending, also, an irregularity in one step may easily upset the equilibrium of a person. To the aged and infirm the descent of an irregularly stepped staircase is a source of terror. Yet how many staircases are constructed absolutely alike as regards the height of the steps? We should say very few; and not only is there little uniformity existing between different staircases but the steps themselves in the same staircase are often irregular. Staircases and the steps in them should be standardised; there should be uniformity of height and breadth, and in regard to the latter there should be room enough on the step to accommodate the whole foot from toe to heel, so that there is no undue call on the energies when ascending, as by going on tip-toe, so to speak, or any feeling of insecurity when descending by reason of there only being room for the heel. Serious falls on staircases are by no means rare and a common cause of such accidents is the fact that staircases are not standardised. Even in dark places the staircase, if standardised, would be more safely negotiated than steps placed without any regard to uniformity. The perils of an ordinary ladder would be enormously increased if the rungs were placed at irregular intervals.

MANCHESTER RECRUITS.

THE recruiting returns for the Manchester district, to which our Manchester correspondent referred last week, are somewhat melancholy reading, showing, as they do, the miserable physique of a large section of the population. Little progress in the direction of improvement has been made since 1899, at the outbreak of the South African War, when it came as a shock to the country to learn that out of 11,000 men who offered themselves for enlistment 8000 were rejected as physically unfit, and of the remaining 3000 only a few over 1000 could be passed into the ranks. The rest were enrolled in the militia, as they just passed the lower standard required. In 1904 the total number offering to enlist in the regular army at the Manchester Recruiting Depôt was 5038 and of these 1738 only were finally approved. Of the others, nearly 1900 were rejected by the recruiters and between 1400 and 1500 were sent back by the recruiting medical officer. The grounds for the rejection of 69 per cent. of the applicants were various—as, e.g., not coming up to the standard of physical requirements or for bad teeth, flat feet, or the absence of a good character. The militia returns for 1904 show that 5150 applied but only 1600 were approved for enlistment. For the regulars recruits must be between 18 and 25 years of age, while for the militia they may range between 17 and 35. In 1905 only 4554 applicants presented themselves for enlisting in the regulars, of whom 732 were finally approved, while for the militia 3813 presented themselves for enrolment, and of these 599 were all who could pass the required standard of physical development or gave any promise of coming up to it. Taking the two years together we find that 18,555 men offered themselves, 14,000 of whom were rejected as being below a very moderate standard of physical fitness, allowing for 402 passed over for want of a sufficiently good character. The returns for the year ending Sept. 30th last show that only 534 recruits were passed into the army and 521 into the militia, the percentage of rejections being on about the same scale. It must, however, be remembered that the offers of enlistment in such towns as Manchester come from what used sometimes to be called "the residuum" of the population, the lowest class, the hapless and perhaps hopeless young fellows who see no prospect of getting food and shelter except by enlistment. The rejected ones presumably drift into the workhouses and some of them into the gaols. As a mere question of fact, who can doubt that if these young men had gone through a course of military drill and exercises, in addition to the routine of the nineteenth or twentieth century education which most of them must have had, and on which many of us have looked with great expectations, their physique and *morale* would have attained to a higher level? It is said that the young men of a superior type do not enlist because of the difficulty of obtaining a livelihood on return to civil life. This is not the place to discuss this aspect of the matter; but the large and growing army of the physically good-for-nothing, or good-for-very-little, that the recruiting returns show as existing in our midst, cannot but give rise to thought, and should lead to efforts to raise this unfortunate stratum of the people to a higher level.

THE THERAPEUTIC VALUE OF SEA-WATER.

Dr. Bousquet has contributed to the *Bulletin des Sciences Pharmacologiques* (1906, No. 8, p. 446) an interesting summary of the history and uses of saline solutions in therapeutics. In 1884 M. Hayem made popular the practice of employing intravenous injections of saline solutions containing five grammes of common salt and ten grammes of sodium sulphate per litre. Afterwards a simple 7 per cent. solution of salt was employed until Malassez proved that a 9 per cent. solution was the most suitable strength to use, and to this the names physiological salt solution or isotonic salt solution were given. Recent studies on the retention of chlorides in the system in certain pathological conditions, particularly in nephritis with production of œdema, have somewhat restricted the application of this form of treatment. There are, however, in Dr. Bousquet's opinion, many pathological conditions in which the injection of saline solutions is of value, especially when their merely mechanical action is supplemented by the addition of actively remedial agents or when sea-water is substituted for saline solution. The sea-water must be collected in the open sea, away from the coast, in order to avoid contamination with animal matter. It must be diluted with distilled water to the strength of physiological salt solution in glass vessels, and it must be sterilised in the cold to avoid dissociation of the constituent salts and the solution of traces of fluorides from the glass vessels. Sea-water has been shown by M. Quinton and M. d'Hallion to be less toxic than salt solution and it has been employed in pulmonary tuberculosis, mental maladies, scrofula, infantile debility, constipation, dysmenorrhœa, migraine, neurasthenia, and in other diseases. At a recent meeting of the Société de

Thérapeutique at Paris a discussion took place on this subject when several speakers denied the superiority of sea-water over ordinary saline solution or artificial serum. On the other hand, it was stated by some speakers that injections of sea-water have a stimulant effect similar to that of cold baths and injections of ether, caffeine, strychnine, and sparteine. This effect was attributed to a rise in arterial pressure due to the injections.

MEDICAL MEN AS CHIEF MAGISTRATES.

UP to the time of going to press we have been notified that the following members of the medical profession have been elected, or re-elected, by their fellow citizens to the mayoral chair for the year 1906-07, viz.: Brighton, Henry Gervis, M.B., B.C. Cantab., M.R.C.S. Eng., L.R.C.P. Lond.; Conway, Councillor Richard Arthur Prichard, L.R.C.P.Edin., M.R.C.S. Eng.; Hackney, Frederick Montague Miller, M.R.C.S.Eng., L.R.C.P. Lond.; Lancaster, William Cowan Hamilton, M.B., C.M. Glasg.; Macclesfield, John Somerville, F.R.C.S. Edin., L.R.C.P. Edin.; Oldham, Robert Gourlay, M.B., C.M.Glasg.; New Romney, Richard Rothwell Daglish, M.R.C.S. Eng., L.S.A. (re-elected); Southwold, Basil Hubert Howard Tripp, M.R.C.S. Eng., L.R.C.P. Lond.

THE USE OF ARTIFICIAL TEATS AND DEFORMITIES OF THE JAW.

IN a paper which was recently read before the Burma branch of the British Medical Association, and which we regret to have been unable to publish, owing to its length, Dr. T. F. Pedley draws attention to the harmful results in the development of the jaws from the use of artificial teats and "baby comforters." The growth of the jaws is, like other parts of the body, dependent upon a normal amount of functional activity but this fact is too often lost sight of by those meditating upon the causes producing the deformed jaw of the present day. Dr. Pedley in his paper emphasises this point and shows how the normal act of breast-feeding tends to produce the functional activity of the jaws. He states that if the child is watched taking his natural food it will be noticed that the mouth is open to the fullest extent, the child taking a mouthful of the mother's breast—the nipple together with a large part of the areola disappears far back in the baby's mouth. At the same time the tongue is protruded over the whole of the lower gum and often over the lower lip and its tip may be seen in the angles of the lips. The infant thus has a soft tough mass in his mouth from an inch to one and a half inches wide, half an inch in thickness, and from an inch to one and a half inches long. This pad when subjected to pressure comes into contact with the larger portion of the palate and the upper gum and the upper surface of the tongue. In this act of feeding at the breast the jaws hardly close. The lower jaw is raised to squeeze the pap against the upper gum and the palate, a wave of contraction passes along the intervening tongue from its tip to its base, in the latter part of which movement there is some retraction of the body of the organ, which in this closed cavity makes for suction, then its approximation to the palate pushes the milk into the pharynx to be swallowed. The milk which is contained in the distended ampullæ immediately above the nipple is squeezed out rather than drawn out by suction. The jaws then separate to admit more milk into the flaccid apex of the breast for the process to be repeated. The first part of this effort of expression is aided by the lower gum biting inside the upper. The cheeks are passive, the whole act is peristaltic, the alternating pressure and relaxation exerted by the jaws and tongue being analogous to that which the milker imparts with his fingers to the teat of the cow. The muscular effort becomes stronger as the secretion lessens. The natural act of feeding therefore tends to bring pressure on the growing bones in the right direction, tending to spread them rather than to contract them in their growth. If we turn to the consideration of the process of feeding by means of the ordinary feeding-bottles, the first point to attract attention is the type of teat usually adopted. It is, as a rule, about an inch to one and a half inches long. That portion which lies between the lips is cylindrical and less than half an inch in diameter when in use. The lips have to be screwed up to grip it, while the tongue folds in its length round a narrow body lying upon its dorsum. There is, therefore, an elastic and resisting material which, when pressed against the upper gum and the palate, can only touch a comparatively small and central portion of those surfaces, the bulkiest and broadest part coming into contact with that portion of the palate which in nature receives the apex of the cone. The flow of milk through its orifices is usually far too slow; it must be drawn out by suction and cannot be increased much in volume by the recurring pressure of the jaws; at the same time air usually must be admitted through its orifices to the bottle to allow of milk being extracted. The cheeks, instead of remaining full and passive as in feeding from the breast, are visibly pushed in by atmospheric pressure. In other words, the act tends to bring pressure on the lateral aspect of the jaws and so contracts rather than expands them. It is possible that, as Dr. Pedley states, the methods of feeding do influence the growth of the jaws but we can hardly agree with him in his other contentions that the deformities of protruding teeth, contracted arch, and adenoids are so intimately connected with artificial teats as he seems to think. We are told by a surgeon attached to one of the dental hospitals that quite a large percentage of children attending his clinic has been naturally fed but in these deformed arches and adenoids are to be met with in plentiful numbers. It is more than probable that the type of feeding in infancy does considerably influence the growth of the jaw during that period but the development of the deformed arch and adenoids is more than likely due to other untoward influences, the chief of which are probably want of functional activity due to inefficient mastication and the impure atmosphere of our towns. Dr. Pedley's paper is a suggestive one and should stimulate others to inquire more fully into the subject, for the exact methods by which the deformed arch is produced are a problem for which no very satisfactory explanation has yet been forthcoming.

SHOP GIRLS AND THE FACTORY ACTS.

AN important Order under the Factory Act issued by the Home Office will come into operation on Jan. 1st next year. By this Order the prohibition of the Factory and Workshop Act of 1901 concerning the employment of young persons under the age of 16 years and children without a certificate of fitness of the young person or child for employment is extended to various classes of workshops, among which is any workshop in which the following processes are carried on: "making, altering, ornamenting, finishing, or repairing of wearing apparel by the aid of treadle sewing machines." This Order, it will be seen, includes most, if not all, tailoring, millinery, and drapery establishments. Hitherto it has been found in many manufacturing cities that young girls who wished to enter mills but who were rejected on account of their unfitness promptly secured situations in milliners' or drapers' shops. Certifying surgeons under the Factory Acts had no power to deal with such cases but now, of course, they have obtained such powers. It is true that sewing machines have rendered needlework less laborious in some ways than was the process of hand-sewing, but on the other hand the use of the machine has brought numerous evils in its train of which all

medical men are perfectly aware. We therefore welcome this new Order and consider that it will be of great value in that it may prevent many a young anæmic and weakly girl from ruining her physical nature by work for which she may be by no means fitted.

PETROLEUM LAMP ACCIDENTS.

IT is satisfactory to learn, in spite of no change having been made in regard to the statutory flash-point of petroleum oil for burning purposes, that there has been a considerable reduction in the number of lamp accidents during the past year as compared with previous years. This result would seem to confirm the opinion expressed in the report of THE LANCET Analytical Sanitary Commission on Dangerous Paraffin Lamps, published in THE LANCET of Jan. 4th, 1896, p. 56, that lamp accidents had their origin chiefly in the flimsy construction and defective fittings of the lamp. This view was strongly attacked by certain factions and amongst them the oil refiners who are interested in the sale of "high-flash" oil. It is a fact, however, that more lamps are now sold with strong metal reservoirs instead of thin glass, china, or "alabaster" reservoirs as hitherto. This was a point strongly insisted upon by our commissioners. Attempts were even made to introduce into Parliament a Bill providing for the prohibition of the sale of oil of lower flash-point than 100° F., but no progress was made with it. The accidents that have been recently reported have all occurred with cheap flimsy lamps provided with defective fittings or fragile reservoirs. It is also an interesting fact that the majority of lamp accidents happen in the cold winter months when the temperature of the air is considerably below the flash-point of the oil regularly used for burning purposes. This, of course, may be due partly to the more frequent and extended use of lamps in the dark days of winter, but in the summer the ordinary temperature is very frequently above that of the flash-point of the oil, and yet a minimum of accidents is then recorded. There are thousands of oil lamps still in use by those who can afford to buy a well-made lamp and the record of accidents in such cases is almost nil. The poor people are the chief sufferers and the lamps which they use seldom cost more than a few pence, but the oil is exactly the same as that used in the well-made lamp. In these circumstances we still think that legislation, if it is to be brought to bear upon the question at all, would effect the most good by insuring the sale of well-made lamps with metal reservoirs.

ACUTE HÆMORRHAGIC PANCREATITIS FOLLOWING OBSTRUCTION OF THE AMPULLA OF VATER.

THE connexion between gall-stones and pancreatitis is now well recognised. Mr. A. W. Mayo Robson stated in his Hunterian lectures[1] that when a gall-stone passes down the dile-duct in a large proportion of cases it must compress the pancreatic duct, causing damming back of its secretion which becomes infected, thus leading to inflammation of the gland. Further, if a gall-stone becomes lodged in the ampulla of Vater it may obstruct the flow of bile into the duodenum and lead to it being forced into the pancreatic duct, which Opie has shown to be a cause of pancreatitis. But no case of acute pancreatitis appears to have been recorded previously in which at operation or necropsy a stone was found blocking the orifice of the ampulla. In the *Johns Hopkins Hospital Bulletin* for August Dr. C. H. Bunting has reported the following case. A well-nourished man, aged 51 years, was subject to attacks of epigastric pain with some constipation which usually were easily relieved. He was seized with intense epigastric pain, became collapsed, and showed considerable abdominal distension. Intestinal obstruction was diagnosed and laparotomy was performed. Some peritoneal adhesions were freed and the wound was closed. There was no fat necrosis to attract attention to the pancreas. Death occurred on the following morning. At the necropsy both chronic interstitial and acute hæmorrhagic pancreatitis were found. The pancreas was large, swollen, and mottled with red areas of hæmorrhage and opaque areas of fat necrosis. The gall-bladder was distended with bile and the bile-ducts were dilated and firm to the touch, showing that there was obstruction to the flow of bile. On gentle pressure bile did not escape from the papilla but on increased pressure there was a sudden escape of bile carrying before it a small yellowish-white mass which unfortunately was lost. In the bile-duct a stone about two millimetres in diameter was found in the apex of the ampulla close to the orifice. In the gall-bladder and cystic duct were about 400 soft light-coloured cholesterin stones, varying from 0·5 to six millimetres in diameter. There was, therefore, little doubt that the escaped mass was a stone. At any rate, there was definite obstruction. The anatomical relations of the ampulla and ducts were such that the obstruction set in progress the mechanism described by Opie and resulted in injection of bile into the pancreatic duct. This duct joined the common duct 11 millimetres from the tip of the papilla and was dilated and bile-stained for four centimetres from its orifice. The common duct was dilated and somewhat hypertrophied. This in connexion with an induration of the pancreas seemed to indicate that the previous attacks of pain were due to the passage of gall-stones, some of which might have been large enough to block the pancreatic duct in transit and cause the chronic interstitial pancreatitis.

[1] THE LANCET, March 26th, 1904, p. 845.

THE FOOD OF THE AMERICAN WORKMAN.

A COMPARISON between the dietaries of American and German working men furnishes Herr B. Laquer of Wiesbaden with an interesting theme in a recent issue of the *Sammlung Klinischer Vorträge*. The picture of the carnivorous well-being of the Yankee artificer may be slightly over-coloured in order that the starchy condition of his Teuton compeer in Nuremburg may appear the darker, but, on the whole, we see no reason for unduly discounting Herr Laquer's statements. The bill of fare of a workman's restaurant in Chicago is described by the writer, and a dinner at a cost of from 40 to 60 pfennigs is detailed. A pfennig is the German equivalent of about one-eighth of our penny, and it thus appears that recently the workman in the notorious "Jungle" was able to dine at a sum varying between 5*d*. and 8*d*. on German mince-meat balls, sea-trout, and roast turkey. In San Francisco Herr Kolb, cited by Herr Laquer, was present at a "tenpenny spread" which is faithfully and feelingly described by him in his work "Als Arbeiter in Amerika" (1902). "The man who could obtain a seat," says Herr Kolb, "ordered soup and made a grab between whiles at (*griff derweilen nach*) anchovies, crabs, radishes, onions, corn-cobs, and other *hors d'œuvres*. After the soup one had a choice between a number of dishes which stood bowl by bowl all over the table. The *pièce de résistance* of each meal naturally consisted of meat; beef, pork, mutton, and veal succeeded one another daily as steak, cutlet, ragout, sausage, and smoked meat. Even sea-fish was not wanting, but though of very good quality it was not much favoured." The vegetables included peas, beans, salad, and asparagus. The supply of sweets and cheese was generous and the fruit included peaches, bananas, and strawberries. "Everything was tasty and plentiful." Alcohol, according to our authority, is not indulged in to excess by the American workman, to

whose credit it should be remembered that during a great coal strike none of the strikers touched intoxicants. If vivacity of character, initiative, and originality depend on variety of food the American stands ahead even of the Southern European and is infinitely superior to our working class with its tea and cold bacon, or, in periods of prosperity, with its chop or steak, forms of food which have come down without change from the days of the berserkers.

RESUSCITATION BY MASSAGE OF THE HEART THROUGH THE DIAPHRAGM.

WE have reported a case in which the pulse and respiration stopped during laparotomy and the surgeon, Mr. W. Arbuthnot Lane, introduced his hand through the abdominal incision, felt the motionless heart, gave it a squeeze or two through the diaphragm, and felt it begin to beat.[1] With the assistance of artificial respiration the patient recovered. In commenting on this case we expressed the opinion that if during laparotomy the heart stopped the case should not be abandoned without performing manual compression of the heart through the diaphragm.[2] Subsequently Mr. H. M. W. Gray reported in our columns a case of tracheotomy for laryngeal obstruction due to cancer.[3] The operation was so urgent that he had to perform it with a penknife. The heart stopped beating and with great promptitude he opened the abdomen with the penknife, inserted two fingers, and performed massage of the flaccid heart. After four minutes the heart began to beat. Artificial respiration then was performed and natural respiration returned. The patient never regained consciousness but lived for about two hours. In the *Intercolonial Medical Journal of Australasia* for September Mr. J. Ramsay has reported the following case. A woman, aged 27 years, the mother of four children, had prolapsus uteri, lacerated cervix, and relaxed vaginal outlet. Under chloroform and ether curettage, trachelorrhaphy, and colpo-perineorrhaphy were performed in the lithotomy position. After the administration of the anæsthetic had been stopped for five minutes violent vomiting began and after a quarter of a minute cyanotic pallor of the face was observed and the pulse could not be felt. The respiration was steady and regular. The head was brought over the end of the table, strychnine and ether were injected, artificial respiration was performed, and the cardiac region was compressed intermittently. Then the head was brought down to the floor and bimanual compression of the left side of the chest, which was very elastic, was performed. The face became more and more cyanosed and the natural respiratory movements became slower. The pupils dilated and the respiration ceased about four minutes after the pulse failed. Without any preparation an epigastric incision was made which did not cause any hæmorrhage. The right hand was inserted between the liver and diaphragm and no heart beat was felt. Bimanual squeezing with the left hand in the præcordial region and the right hand under the diaphragm was performed about every second. After about a dozen squeezes a slight quiver was felt which was thought to be a contraction of part of the diaphragm. Another dozen squeezes were followed by another quiver at the infra-cardiac portion of the diaphragm. After a few more squeezes a feeble heart beat was felt. Then irregular heart beats were felt and gradually became more powerful. The beats became regular and the pulse was felt at the wrist after an absence of about five minutes. Spontaneous respiration then commenced and a pulse of 100 was established. The cyanosis was gradually replaced by a normal colour and the corneal and pupillary reflexes returned. The question arose as to the treatment of the abdomen and wound, for the hands of the surgeon must have been infected during the attempts at resuscitation and also the patient's skin had not been sterilised. The area of the wound was mopped with swabs of normal saline solution and the peritoneal cavity was filled with this fluid. Three and a half pints of the solution were left in the peritoneal cavity before suturing the wound. The patient was taken back to the ward with a pulse of 120 and fair tension and volume. About an hour later the pulse was irregular and intermittent, rising to 152, and about three hours after operation to 168 with a temperature of 101·6° F. and respirations of 28. The patient slept for four hours and perspired freely. At times she was delirious. On the following morning the pulse was 120 and the temperature was 99·8°. Good recovery ensued. There is another and more heroic method of performing massage of the heart—by resecting the fifth and sixth ribs and opening the pericardium. But permanent success has never been achieved by this method.

[1] THE LANCET, Nov. 22nd, 1902, p. 1397.
[2] THE LANCET, Nov. 29th, 1902, p. 1476.
[3] THE LANCET, August 19th, 1905, p. 506.

FEES FOR MEDICAL INSTRUCTION IN FEVERS.

AT a meeting of the Metropolitan Asylums Board on Nov. 10th the hospitals committee reported that it had received a letter from the medical superintendents of the Board's hospitals in which classes of instruction in fevers were held, in which attention was called to the question of the proportion of the fee paid by each student which was allotted to the medical superintendent who acts as instructor. The fee, it was pointed out, for attendance at a class of instruction in fever was £3 3*s*. for the first two months and £1 1*s*. for each additional month (in practice students do not attend for more than three months), and the medical superintendent who acts as instructor receives a fee of £2 2*s*. in respect of each student irrespectively of the length of the course taken by that student, the additional £1 1*s*. paid for attendance during a third month being retained by the Board. The medical superintendents in their letter urged that, having regard to the fact that attendance during a third month involved additional work on the instructor, the extra guinea paid for that month should be allotted to the medical superintendent in return for the extra instruction afforded. The committee considered that the request was a fair and reasonable one and recommended that, subject to the sanction of the Local Government Board, the additional guinea should be paid to the medical superintendent who acts as clinical instructor. The recommendation was agreed to and the report was adopted.

SCLEREMA NEONATORUM.

WE have recently published in our columns five cases of this rare disease.[1] In two instances the condition attacked twins. In THE LANCET of Nov. 10th Dr. Rupert Waterhouse gives a full description of the case, which came under his notice, which in addition to exhibiting the ordinary characteristics of the disease as met with in this country, also presented some rare and interesting features. The child was, as usual, prematurely born. The disease was first noticed four days after birth, and the distribution of the lesions and most of the general features of the case corresponded with the description of cases previously reported. A noteworthy feature of the case described by Dr. Waterhouse was the presence of vessels containing fluid which were found in an indurated patch in the loins. These vessels were quite superficial and thin-walled and after death no trace of them could be discovered. The explanation suggested by Dr. Waterhouse is probably correct—namely, that they were lymph spaces distended with fluid fat which

[1] THE LANCET, August 4th, p. 296; Nov. 3rd, p. 1215; and Nov. 10th, p. 1222, 1906.

after death solidified. Dr. P. S. Abraham, writing in Professor T. Clifford Allbutt's "System of Medicine," Vol. VIII., points out that under the name of "sclerema neonatorum" two diseases which appear to be distinct have been described indifferently by authors until Parrot in 1887 pointed out their confusion. In one class of case to which dermatologists, following Parrot, are now inclined to restrict the name "sclerema neonatorum," the skin rapidly becomes waxy in appearance, leathery in consistence, very rigid, and adherent to the underlying tissues. The description given by Dr. Waterhouse of the cutaneous lesions observed by him closely corresponds with Parrot's observations. Another point of interest in the case recorded by Dr. Waterhouse is the rise of temperature which occurred. As a rule, all functions seem to be impeded, food cannot be taken, and the respiration- and pulse-rate fall. The account recorded by Dr. Waterhouse is a valuable one and the details are given with great clearness.

INVESTIGATION ON ANTHRAX AT BRADFORD.

THE Anthrax Investigation Board holding its sittings at Bradford does not in its annual report give very much encouragement as to the means for avoiding or preventing the disease. It seems that a temperature of 300° F. (dry heat) must be maintained for three hours to kill anthrax spores. The statement is made that at some commission combing works there have been many more cases than at others where similar materials are dealt with, while some commission combers have been practically free from cases of anthrax. This suggests that the differences in the "methods employed in handling and dealing with the scheduled materials previous to washing" should be carefully investigated. Mr. Shinner, inspector of factories, giving evidence in a case of death from anthrax which was reported in our columns on Nov. 3rd, p. 1245, said that the Home Office had been considering the matter for some years and pointed out that the extreme resisting power of anthrax spores was the great difficulty. A temperature of considerably above the boiling point of water is necessary to kill these spores and such a temperature would practically destroy horsehair or other hair for manufacturing purposes. The only real cure at present would seem to be, as Mr. Shinner said, to prevent the entry of infected material and this is by no means an easy matter.

THE PREVENTION OF INFANTILE MORTALITY.

ON the occasion of his entering into office as chief magistrate of Huddersfield two years ago Alderman Broadbent promised to give to every child who was born in the district of Longwood during his mayoralty—i.e., between Nov. 9th, 1904, and Nov. 9th, 1905—£1 on the first anniversary of the baby's birthday. The object of the experiment was to ascertain whether by constant watchfulness on the part of a small band of voluntary lady workers, who would be always ready to help the mothers by advice, any appreciable reduction in the infantile mortality-rate of Longwood could be effected. The first baby to whom the gift was promised was born on Nov. 10th, 1904, and the last on Nov. 8th, 1905. During the past decade the average infantile death-rate was 139 per 1000, while in the Longwood district for the same period the figures show 122 per 1000. Alderman Broadbent, recently in the course of a speech, said that he had gained the end at which he aimed. Throughout the two years the conditions had been by no means favourable as whooping-cough and measles had been very prevalent. The number of babies in the district who received the promissory note for £1 was 112. Of these 107 received the gift. Four of the 112 had died and one had left the district and could not be traced. Counting only four as dead the mortality figure was 35 per 1000, but counting five it was 44 per 1000, or counting six due to the overlapping of the periods the figure would be 53 per 1000, so that the infantile death-rate for the experiment was reduced to less than one-half the average rate. The babies belonged to all classes and some lived in places hardly better than slums. The result, so far as the object of the experiment itself is concerned, has been satisfactory and we congratulate Alderman Broadbent upon the success of his efforts. He stated that he had not intended his bonus to be a stimulus to maternal affection or care—qualities which should not require so to be stimulated.

THE INTERNATIONAL LARYNGO-RHINOLOGICAL CONGRESS.

THE International Laryngo-Rhinological Congress which will meet in Vienna from April 21st to 25th, 1908, under the honorary presidency of Hofrat Professor von Schrötter, will celebrate the memory of Türck and Czermak and will coincide with the fiftieth anniversary of a notable year in that department of practical medicine. The work of the Congress will be confined to scientific addresses and demonstrations, and there will be an exhibition of instruments and apparatus in connexion with it. The addresses and papers (*Referate und Vorträge*) may be in German, English, or French; they must not occupy more than 20 minutes at most in delivery; and a short summary of each in one of the above-mentioned languages must be sent to the secretary by Dec. 31st, 1907, at latest. In the discussion members may speak only once on each subject and for no longer than five minutes. The members' subscription of 25 kronen, or £1, may be paid to Dr. Gottfried Scheff, the treasurer of the Congress, or to the representatives of the individual laryngological societies. Medals with likenesses of Türck and Czermak will be distributed as souvenirs. Each member will receive a printed copy of the Transactions of the Congress. The president of the Congress will be Professor O. Chiari and the secretary is Professor M. Grossmann, IX., Garnisonsgasse 10, Vienna.

A NEW METHOD FOR DETERMINING THE ACIDITY OF THE URINE AND THE CLINICAL VALUE OF THE RESULTS.

A PAMPHLET,[1] a copy of which has reached us, has recently been published containing an account of a new method for determining the acidity of the urine by M. H. Joulie, late of the Paris hospitals. Contrary to the generally accepted views which regards the blood as an alkalin efluid, M. Joulie holds with M. Gautrelet that the blood is in reality acid and is the cause of the acidity of the urine. It is well known, of course, that the acidity of the urine is due chiefly to acid phosphates, but it is not generally accepted that the acidity of the blood is due to the same acid salts. In the blood, however, the reaction of these salts is held to be masked by the presence of an excess of bicarbonates which, whilst chemically speaking are acid salts, yet yield a blue reaction to litmus. They are practically absent in urine. Since the phosphates of calcium and magnesium are present in solution in the urine it follows, says M. Joulie, that they must necessarily be present in the blood. These phosphates are insoluble in an alkaline medium and hence the blood in which they are present in solution must be a chemically acid fluid. The argument being, therefore, that the degree of the acidity of the urine is a measure of the degree of the acidity of the blood, M. Joulie proceeds as follows. A specimen of the first

[1] The Acidity of the Urine, read at the Institut Pasteur by M. H. Joulie. Translated from the French by A. X. Stavros, D.Sc. London: John Bale, Sons, and Danielsson.

morning urine passed before breakfast is taken and not a sample of the 24 hours' output as is usually the case. The acidity is determined as are also the phosphates and the ratio of the phosphates to acidity may thus be discovered. It is possible, M. Joulie thinks, to gain from these factors absolute indications of metabolic changes occurring in the organs and tissues, whilst definite lines of treatment are clearly suggested. In the analysis a solution of saccharate of lime is employed to neutralise the phosphates, a point which is reached when the fluid becomes turbid owing to separation of the phosphates. The amount of acid keeping the phosphates in solution is thus determined. Full analytical details are given in the pamphlet referred to as well as some interesting clinical observations relating to the results of the treatment successfully pursued in accordance with the facts brought to light by this method of analysis.

MALARIA IN GREECE.

ON another page of our present issue we publish an abstract of an address giving the results of some investigations on malaria in Greece made by Professor Ronald Ross, C.B., Director of the Johnston Tropical Laboratory in the University of Liverpool. Professor Ross has found that in Greece—that small and outlying country which fills so large a place in the intellectual and linguistic history of the world—malaria is extremely prevalent and, moreover, presents types of average malignity worse than in the other malarious countries of Europe. From the discovery made only a few years ago that malaria and yellow fever are gnat-borne diseases, it was but a short step to devise means of prevention or at least of repression, and the conspicuous successes which have been already obtained in this direction as shown in both hemispheres have taken their place among the routine measures of preventive medicine. Professor Ross now argues that there can be no serious difficulty in extending to the whole of Greece this boon of relief from malaria. Financial aid is the principal requisite and a subscription list has already been opened in Great Britain on the initiative of the Liverpool School of Tropical Medicine. Sir Alfred Jones, the chairman of the school, has announced that Her Royal Highness Princess Christian had consented to be patroness of the fund in Great Britain and that subscriptions may be paid to the secretary of the Liverpool School of Tropical Medicine, B. 10, Exchange Buildings, Liverpool.

THE MEDICAL LIBRARIES OF LONDON.

Mr. W. R. B. Prideaux of the Royal College of Physicians of London contributed to the September number of the *Library Association Record* a very interesting paper on the Medical Libraries of London, and it is now published by the Aberdeen University Press, Limited, in the form of an 18-page pamphlet. In several respects it gives useful information which is not otherwise readily accessible. Mr. Prideaux classifies the libraries in five divisions, according as they belong respectively: (1) to the medical corporations and the university; (2) to the general medical societies; (3) to the special medical societies; (4) to the medical schools and hospitals; and (5) to post-graduation places of study. Class 1 is represented by the libraries of the Royal College of Physicians of London, the Royal College of Surgeons of England, the Society of Apothecaries, and the University of London. With regard to the first two of these many historical details are given and, moreover, passages are quoted from an article which appeared in THE LANCET of April 23rd, 1836, and in which the administration and management of these libraries were criticised with much frankness. The article in question was a very favourable review of Dr. (afterwards Sir) John Forbes's "Select Medical Bibliography." Class 2 includes the libraries of the Royal Medical and Chirurgical Society, the Medical Society, the British Medical Association, the Hunterian Society, and the West London Medico-Chirurgical Society. Class 3 consists of the libraries of the Obstetrical Society, the Ophthalmological Society, the Laryngological Society, the Otological Society, and the British Balneological and Climatological Society. Class 4 is composed of the libraries of 11 medical schools. The order of size, as far as ascertainable, is as follows:—Royal Medical and Chirurgical Society, about 60,000 volumes; Royal College of Surgeons of England, over 50,000 volumes; Royal College of Physicians of London, about 25,000 volumes; and University College (medical section), over 16,000 volumes. Incidental reference is also made to the libraries of the Pharmaceutical Society and the Royal Sanitary Institute, as well as to the one which is being formed by the Pharmacopœia Committee of the General Medical Council, but there is no allusion to the medical literature in the library of the British Museum.

ALCOHOL COMPRESSES IN THE TREATMENT OF INTESTINAL PERFORATION.

Dr. A. Raphael has recently employed alcohol compresses in the treatment of intestinal perforation in typhoid fever, and an account of the results is given in the *Semaine Médicale* of Sept. 19th. In one case perforation occurred on the eleventh day; on the next day the abdomen was completely covered with a layer of cotton-wool soaked in alcohol, with a waterproof material over all. After a few hours considerable improvement was manifest, especially in the state of the pulse. After a week, during which time five litres of alcohol had been employed, the presence of a collection of purulent matter was observed in the abdomen and the compresses were continued until the sixteenth day. Two days later a fistula formed on the umbilicus which readily permitted the drainage of the purulent matter. After this treatment the patient recovered without further complications.

THE NATURE OF JENSEN'S TUMOUR.

IT seems somewhat late in the day to dispute the value of Jensen's work on cancer in mice after the Walker prize of the Royal College of Surgeons of England has been awarded to him and when an International Conference on Cancer has been rendered possible by the progress which dates from the publication of Jensen's paper in 1903. But we publish in another column a letter from Mr. W. Roger Williams, whose attitude towards the work of Jensen is sufficiently well illustrated by his suggestion that that observer should refuse to accept the prize and thereby admit that the award was wrongly made. Mr. Williams's letter may be regarded as a sequel to communications made at a meeting of the Pathological Society of London by himself and Dr. W. S. Lazarus-Barlow, director of the Cancer Laboratories of the Middlesex Hospital. We may say at once that in our view Jensen, a practising veterinary surgeon, has rendered to experimental medicine services which justly entitle him to the prize. He has initiated a long series of fruitfu investigations and there seems no adequate reason for suspecting the sincerity of the conclusions reached later by other observers, e.g., Bashford and Murray, Borrel, Ehrlich and Apolant, Haaland, Metchnikoff, and Michaelis. The fact that Jensen himself left the final demonstration of the justice of his conclusions to others would be a most unjust argument to employ against his reception of the Walker prize. Hanau and Moreau showed the reproduction (after inoculation) in new animals of the histological features of the original tumour, but Jensen followed the process step by step and demonstrated that when the

inoculation of cancer is successful, the cellular graft inoculated alone furnishes the cells of the parenchyma of the tumour in the new animal. It is this fact, first amply confirmed and extended to other malignant new growths in the laboratories of the Imperial Cancer Research Fund, which those who awarded the Walker prize regarded as placing the experimental study of cancer on a securer basis. No investigator has claimed in any way that brings conviction that the experimental study of cancer as yet bears directly on the practical treatment of the disease. The frequency with which it is impossible to diagnose the presence of malignant new growths of internal organs and the inconstancy of the symptoms are generally recognised, and those who will study the complicated problem in all its bearings will be the first to see that as yet treatment is in no way dissevered from accepted surgical teaching.

THE TREATMENT OF IMBECILES IN WORKHOUSES.

ON Oct. 1st it appears that the Aberystwyth board of guardians carried the following resolution :—

That arrangements be made for the reception in the workhouse of three imbeciles from the Carmarthen Asylum, such cases to be selected by the medical superintendent of the asylum.

On Oct. 29th the matter was again debated and after an apparently heated discussion the resolution of Oct. 1st was rescinded. The great difficulty of the housing of the poor in workhouses is the segregation of all sorts and conditions of men. Now to admit imbeciles as well is considered by some persons to be a direct hardship for the respectable poor who, owing to adverse circumstances, have had to apply for relief. Certainly it does not appear that the removal of three imbeciles from the asylum to the workhouse would prove so beneficial to the ratepayers that the guardians should risk the danger of creating dissatisfaction amongst the poor of the neighbourhood. Even as an experiment it does not seem to offer great chances of success and it would certainly appear advisable to develop some more comprehensive scheme for dealing with those who are considered suitable for a less costly treatment than can be obtained in an asylum before disturbing the existing arrangements.

THE SOCIETY OF APOTHECARIES.

THE Master and Wardens of the Society of Apothecaries entertained a numerous and representative company at dinner at the Hall of the Society on Nov. 13th. The chair was occupied by the Worshipful Master, Mr. E. Parker Young, who was supported by the Wardens, Mr. George Wilks, and Mr. F. Gordon Brown. The occasion is known as the Lord Mayor's day dinner, but owing to other engagements the Lord Mayor was not present, but was represented by the sheriffs, Dr. T. Boor Crosby and Mr. Dunn. Amongst those present were Lord Kinnaird, Sir Constantine Holman, Professor T. Clifford Allbutt, Mr. H. Morris (President of the Royal College of Surgeons of England), Mr. F. H. Champneys, Sir Shirley Murphy, Sir J. Dimsdale, and others. The toast of "The Houses of Parliament" was proposed by the Senior Warden, Mr. Wilks, and was responded to by Lord Kinnaird. Mr. Gordon Brown, the Junior Warden, proposed "The Lord Mayor and Corporation of the City of London," which was responded to by Dr. Crosby, who recounted some of the excellent work which was undertaken by the City. Professor Clifford Allbutt, in proposing "The Society of Apothecaries of London," alluded to some interesting facts connected with the early history of the Society, and he expressed the opinion that a scheme of incorporation of all the various medical societies was bound to come which might be called the Academy of Medicine. He eulogised the work of the general practitioner, who, after all, had the personal care of the patient in his own hands, a fact which placed the consultant on a somewhat different footing. The toast of "The Royal Colleges of Physicians and Surgeons" was proposed by the Worshipful Master and was replied to by Mr. Morris. The final toast, that of "The Visitors," was proposed by Deputy Surgeon-General J. H. Jeffcoat and was acknowledged in suitable terms by the Clerk to the Privy Council. The dinner, which was held in the quaint and beautiful hall of the Society, was a most enjoyable one and the company present consisted chiefly of members of the medical profession.

THE Department of Public Health of Queensland, in a bulletin dated Sept. 29th, states that during the week ending on that date 1 suspicious case of illness was reported from Cairns. In a bulletin dated Oct. 6th, the department states that the suspicious case in question had been submitted to clinical and bacteriological examination with negative results as regards plague. A telegram from the Governor of the Mauritius received at the Colonial Office on Nov. 10th states that for the week ending Nov. 8th there were 37 cases of plague and 28 deaths from the disease.

THE Marylebone division of the British Medical Association will hold on Monday, Dec. 3rd, a discussion, open to all members of the medical profession, on the Economic Problems in the Practice of Medicine. The discussion will be held in the rooms of the Royal Medical and Chirurgical Society, 20, Hanover-square, W., and Sir Richard Douglas Powell, Sir John Tweedy, and Dr. J. Kingston Fowler are announced to take part in the debate.

THE autumn dinner of the Irish Medical Schools' and Graduates' Association will take place at the Hotel Great Central, Marylebone-road, London, N.W., on Wednesday, Nov. 28th, at 7.30 P.M. The guest of the association will be Admiral Sir Edward Seymour, G.C.B., O.M. Tickets can be obtained by members of the association from Mr. E. Canny Ryall, 85, Harley-street, W.

We have made many and vigorous protests against the motor omnibus as at present constituted. But let praise be given where it is due. In response to the complaints of the authorities of Charing Cross Hospital the proprietors of those vehicles which were wont to proceed along King William-street have unanimously adoped an alternative route.

THE eighth annual dinner of the Medical Graduates' College and Polyclinic will be held at the Trocadéro Restaurant, London, W., on Wednesday, Dec. 12th, at 7.15 for 7.30 P.M. Dinner tickets, price 7*s.* 6*d.*, exclusive of wine, may be obtained from the medical superintendent, 22, Chenies-street, Gower-street, London, W.C.

Mr. Asquith, Chancellor of the Exchequer and Rector of the University of Glasgow, will preside at a dinner of the Glasgow University Club in London at the Trocadéro Restaurant, Piccadilly-circus, on Friday, Dec. 7th, at 7.15 for 7.30 P.M. Application for tickets should be made to the honorary secretaries, 63, Harley-street, W.

A SPECIAL meeting of the Fellows of the Medical Society of London will be held on Monday, Dec. 3rd, at 9.15 P.M., when Dr. Henri Hartmann, professor in the Medical Faculty of the University of Paris, will deliver an address entitled "The Surgical Forms of Ileo-cæcal Tuberculosis."

THE next dinner of the Edinburgh University Club of London will take place at the Criterion Restaurant on Friday, Nov. 23rd, at 7.30 P.M. The chair will be occupied

by Sir J. Halliday Croom and all communications should be made to the honorary secretary at 73, Wimpole-street, W.

THE last monthly meeting of the Ophthalmological Society of the United Kingdom was devoted to a discussion of the question of the amalgamation of the medical societies having their headquarters in the metropolis. The Ophthalmological Society decided to remain a separate body.

MALARIA IN GREECE.

BY RONALD ROSS, F.R.C.S. ENG., F.R.S., C.B.,
PROFESSOR OF TROPICAL MEDICINE, UNIVERSITY OF LIVERPOOL.

[THE following is an abstract of an address which was delivered before the Oxford Medical Society on Nov. 9th, Professor W. OSLER being in the chair.]

I consider myself extremely fortunate in being able to introduce the subject of malaria in Greece to my countrymen through such a very appropriate avenue as the Oxford Medical Society. For where could anyone who wishes to discourse of Greece do so better than in Oxford—herself the daughter of Greece, who has borne through the ages the torch first fired in that divine country?

Early in the present year I was asked by a British company which owns large tracts of land in Greece to go there in order to advise as to the best means of reducing the malaria which for a long time had been persecuting the company's employees. The particular valley which I was called upon to visit was that of Lake Kopais in Boeotia and I arrived there towards the end of May. This valley or plain is a large area about six miles broad and 12 miles long, the long axis pointing west and east. On the east the plain is bounded by the mountain of the Sphinx, which seems from certain points of view to have the shape of a woman's figure reclined along its crest. Along the whole of the south side runs the beautiful range of Helikon, the mountain of the Muses. The birthplace of Hesiod is in one of its valleys; and near one of the summits there is the famous fountain of Hippokrene. At the western extremity of the plain rises the magnificent mass of Mount Parnassos, the mountain of Apollo, with its summits clad in dazzling snow. The Kopaik plain itself is almost absolutely flat right up to the feet of the hills which bound it, being indeed the dried bed of a lake. In ancient days, according to the interesting writings of Dr. J. G. Frazer of Cambridge, this lake was a large sheet of water in the winter and in the summer a series of marshes overgrown with sedge, with rivers winding through them and patches of dry land between. The lake was drained in very remote times by the people of Orchomenos, a town upon its banks, and the remains of the drainage works are still visible. The water enters from numbers of small rivers and streams gushing out of the surrounding mountains, and naturally escapes, singularly enough, into great caverns, of which there are many, called katavothrae. In the Middle Ages the drainage works appear to have been allowed to fall out of repair; but recently a French company resumed the task; and, still more recently, the work was taken up by the British Company, the Lake Kopais Company, which asked me to study the malaria for them. The whole bed of the ancient lake is now a great plain covered with crops of all kinds, which repay the cost of the engineering works. The water is at present discharged through adjacent valleys into the sea. It was here that the malaria was so troublesome. The Lake Kopais Company has many hundreds of employees and tenants who were constantly being attacked, although most of them were natives of Greece. It had not been found possible to keep accurate statistics of the annual number of cases, so that my first care was to make an estimate for myself of the amount of malaria present. This can be done with a fair degree of accuracy, without the help of statistics, in two ways—by ascertaining the proportion of people who either (1) have the parasites of malaria in their blood, or (2) possess enlarged spleens. The first method was much used in India by Stephens and Christophers, who called the ratio of infected persons to the total population the endemic index. To obtain an absolutely correct figure by this means we must make an exhaustive microscopical examination of the blood of every person in the area under consideration; but this would be too laborious for practical purposes, and we must consequently content ourselves with an approximate valuation obtained by examining only a part of the local population. As shown by these observers, and by Professor Koch, it is especially the native children in a malarious locality who have the parasites in detectable numbers, the older people becoming comparatively immune. The blood of a number of unselected children is therefore carefully searched for the parasites and the ratio so obtained is recorded as the approximate endemic index. For exact work a large number of children must be examined, as otherwise the margin of error, as shown by Poisson's formula, will be very considerable. For example, if 50 children be examined and 25 of them be found to contain parasites, the error will be no less than 20 per cent., so that the approximate endemic index will not be 50 per cent., as a hasty observer may think, but anything between 30 per cent. and 70 per cent. This fact is worth recalling because it has been much overlooked in recent work on the subject and because it shows how laborious the method really is. The second method, that of examining children for enlargement of the spleen, a thing which can be done in a minute, is much easier and fairly trustworthy, provided that no other cause for splenomegaly is present. With the valuable assistance of Dr. Kardamatis, general secretary of the Grecian Antimalaria Society, and of Mr. D. Steele, manager of the Lake Kopais Company, in Greece, I was able to use both methods. On examining 57 of the employees, most of whom were Greeks, we found enlargement of the spleen in 14 and the parasites in nine. But five of those who had parasites had no enlargement of the spleen and must be added to the infected list, which therefore amounts to 19 out of the 57, or one-third. The majority of these people were adults and many had come from other localities, so that the figures are not useful for statistics.

Our next care was to examine the people in some of the neighbouring villages. Out on the plain, about a mile or more from the company's houses, there is the village of Moulki, containing some 350 inhabitants. The houses are closely clustered together with very irregular and elementary lanes between them. Going to the village inn close to the school we set to work and examined 80 persons, mostly children: first, by palpating them for enlargement of the spleen, and, secondly, by making dried films of their blood for future microscopical inquiry. The scene was most interesting. Seated under a large tree, with the village priest as our patron and protector, we pricked and palpated the little ones, one by one. I never saw pluckier children. Scarcely one of them even winced. Nearly all of them were very intelligent and many good-looking, but, alas, most of them were far from well and some looked miserably ill, emaciated, and anæmic. The cause was speedily revealed. Out of 62 of the children between the ages of five months and 14 years, no less than 35 were found to have enlarged spleens; and as no other cause of endemic splenomegaly, such as kala-azar, could be ascertained to be present in the locality we could attribute the enlargement in these children only to malaria. This diagnosis has been fully confirmed by subsequent examinations of the blood films, which showed that the parasites existed in at least 17 of the 62 children at the time when the films were made. Of these, five had no appreciable enlargement of the spleen, so that this number must be added to the number of spleen cases in order to arrive at the total yielding evidence of infection. Hence, out of the total 62 children no less than 40 were certainly infected, a ratio for them of 64·5 per cent. This is, of course, the lower limit of the ratio because it is quite possible, and, indeed, very likely, that the parasites were overlooked in some of the films. Such a ratio was unexpectedly high for any European country and is almost equal to any that has been found in Indian or African children. I may add that in many of the children the splenic tumour was very great, reaching almost to the crest of the ilium. This is important in view of statements recently made in India to the effect that great splenic tumour is probably due to kala-azar rather than to malaria. The former disease is apparently not present in Greece, the Leishmania Donovani parasite never having been discovered there. Moreover, the Grecian cases were markedly different from the cases of kala-azar studied by me in Assam in 1898 for the purposes of an official report. In not a single one of the former did we note any enlargement of the liver so commonly seen in kala-azar; there was not the constant fever of kala-azar; the expression of the face was the unconcerned expression of malaria rather than the hopeless look

of the deadly eastern disease; and, lastly, the death-rate was far too small for the latter. Nevertheless, the splenic enlargement in a few of these cases of pure malaria was, I think, as great as anything I saw in kala-azar. Of course, many of the children were shockingly anæmic and emaciated—not in any way, I was informed, from lack of food nor apparently from the great prevalence of other diseases. The work was clearly that of the spirit of the marsh.

The next thing to do was to find the source of the malaria, or rather its carrying agents, the local anophelines. As I have said, the Kopaik Plain is now drained and cultivated over its whole extent; but there exists a long series of shallow pools suitable for the larvæ in the "borrow-pits" made by the engineers who constructed the railway embankment across the plain. Sure enough in some of these pits close to Moulki we found the peccant insects—the larvæ of myzomyia maculipennis—a known carrier of malaria. These gnats, rising from the pools, pour into the village and into neighbouring houses, such as those of the company, become infected by biting the numerous infected children, and then infect any healthy persons whom they may subsequently bite. The old drama, now so well known, was obviously being played out again before our eyes.

[Professor Ross here described short visits which he made to the neighbouring villages of Mazi and Skripou (the ancient Orchomenos), and Livadhia, a town of 6200 inhabitants, situated at an altitude of 540 feet on the spurs of Helikon. Malaria was rife in all these places. On the other hand, in Thebes, which is now a town of 4780 inhabitants, he found enlargement of the spleen in only one child out of 50 examined. He then continued as follows:—]

Thus, altogether, out of 292 unselected children examined by us in five different places, we found unmistakeable evidence of malaria in 97, or one-third. In addition to the children we examined 18 adults at Moulki. As is now well known, the adult natives of a malarious locality become comparatively immune, their spleen returning to the normal size and the parasites becoming extremely scarce in their blood. Nevertheless we found signs of malaria in four of these adults—but, of course, such figures are not useful for estimating the endemic index. Including all we found certain evidence of malaria in 120 out of 367 persons, or 32 per cent. The figures for the children, however, give a reliable and high malaria rate, especially when it is remembered that they were collected at the beginning of the summer *before the annual malaria season had commenced*. Later in the year the endemic index would certainly have been still higher. If, moreover, we had examined the blood of the 200 children dealt with at Orchomenos, Livadhia, and Thebes, we should certainly have been able to add many other cases of infection to our list; while, lastly, we should remember that in all cases of malaria the parasites frequently become temporarily too few for detection by the microscope. Our total estimate of 33·2 per cent. infected children must therefore be much below the maximum ratio and may be looked upon as a minimum ratio. The statistical correction by Poisson's formula works out at 7·7 per cent., so that we have finally for the five localities, Moulki, Mazi, Orchomenos, Livadhia, and Thebes, a minimum child malaria-rate of between 25·5 per cent. and 40·9 per cent. The truth is, probably, that at Moulki and Orchomenos *all* the children are really infected in the autumn. With regard to the number of breeding places of anophelines we found them only in two small pools, one at Moulki and one at Orchomenos; and the former of these was immediately drained away by Mr. Steele of the Lake Kopais Company. The season, however, was early and our search far from exhaustive. Many more pools will, of course, be found; but, nevertheless, I infer that the amount of breeding surface per square mile of country is extremely small, so that anti-propagation measures ought to be correspondingly cheap.

Such were the results of my own observations; and I will now give briefly some figures which I obtained for the whole of Greece. Within the last year or two there has been founded at Athens an admirable malaria society for the study of such questions. It is under the patronage of His Majesty the King of Greece and consists of many enthusiastic members. One of these is my friend Dr. Savas, professor of hygiene at the University of Athens and physician to the King of Greece; and the general secretary is my friend Dr. Kardamatis who gave me so much assistance at Lake Kopais. From them I obtained the following approximate figures for the whole of Greece: Population of Greece, 2,433,806; average annual number of cases of malaria, 250,000; average annual number of deaths from malaria, 1760; number of cases of malaria during 1905, 960,048; number of deaths from malaria during 1905, 5916.

These figures are, I think, as sound as any that can be collected from statistics. Malaria is a very difficult disease to deal with in this way, because it does not consist of a single severe attack demanding immediate medical assistance, but rather of a series of comparatively slight attacks extending over a period of years, and, moreover, occurring principally in young children. Many cases do not find their way into the returns at all, while, on the other hand, relapses must be frequently entered as fresh infections. As for the death-rate, comparatively few cases die simply from malaria, but many are carried off by intercurrent pneumonia or diarrhœa, or perish gradually from anæmia, under which headings the mortality is often recorded. Last year was a very bad year, with a recorded death-rate of 2·4 per 1000 of the population. Nor is the malaria of a benign type in Greece. On the contrary, I was informed by the gentlemen mentioned above, and also by a number of medical men whom I met at Thebes and Livadhia, that pernicious attacks are very common, and that the most serious form, that of blackwater fever, is extremely common. Such facts are recorded also in the writings of Kardamatis, Savas, and other able Greek observers. The disease is therefore extremely, if not shockingly, rife in the country—much more so even than in Italy. Dr. Savas told me that from some statistics which he had studied, the number of cases and deaths in Greece are half again as numerous as in Italy for equal numbers of people. All species of the parasites are to be found in Greece. In our own studies the mild tertian parasite occurred most frequently, the so-called malignant species next commonly, and the quartan least of all—but not rarely. Regarding the species of anophelines which carry malaria in the country, Dr. Savas told me that out of 1839 of these insects 1778 were found to be anopheles maculipennis, 21 to be anopheles bifurcatus, and 20 to be pyretophorus superpictus, all well-known agents of the disease.

Now what must be the effect of this ubiquitous and everlasting incubus of disease on the people of modern Greece? Remember that the malady is essentially one of infancy among the native population. Infecting the child one or two years after birth, it persecutes him until puberty with a long succession of febrile attacks, accompanied by much splenomegaly and anæmia. Imagine the effect it would produce upon our own children here in Britain. It is true that our children suffer from many complaints—scarlet fever, measles, whooping-cough; but these are of brief duration and transient. But now add to these, in imagination, a malady which lasts for years and may sometimes attack every child in a village.

We now come to that profoundly interesting subject, the political, economical, and historical significance of this great disease. We know that malaria must have existed in Greece ever since the time of Hippocrates, about 400 B.C. In prehistoric times Greece was certainly peopled by successive waves of Aryan invaders from the north—probably a fair-haired people—who made it what it became; who conquered Persia and Egypt, and who created the sciences, arts, and philosophies which we are only developing further to-day. That race reached its climax of development at the time of Pericles. Those great and beautiful valleys were thickly peopled by a civilisation which in some ways has not since been excelled. Everywhere there were cities, temples, oracles, arts, philosophies, and a population vigorous and well trained in arms. Lake Kopais, now almost deserted, was surrounded by towns the massive works of which remain to this day. Suddenly, however, a blight fell over all. Was it due to internecine conflict or to foreign conquest? Scarcely; for history shows that war burns and ravages but does not annihilate. Or was it due to some cause, entering furtively and gradually sapping away the energies of the race by attacking the rural population? Those who have read Dr. W. North's fascinating book on Roman Fever[1] will remember the suggestion that the depopulation of the Campagna was due to the sudden introduction of malaria by the mercenary troops of Sulla and Marius; and so recently as 1866, as we know from the works of Dr. Davidson of Edinburgh, malaria entered and devastated the islands of Mauritius and Reunion, either the mosquito or the parasite having been then brought in from without.

[1] Sampson Low, Marston, and Co., 1898.

Similarly, could it not have been introduced into Greece about the time of Hippocrates by the numerous Asiatic and African slaves taken by the conquerors? Supposing, as is probable, that the anophelines were already present, all that was required to light the conflagration was the entry of infected persons. Once started the disease would spread by internal intercourse from valley to valley; would smoulder here and blaze there; and would, I think, gradually eat out the high strain of the northern blood. I am confident that causes such as malaria, dysentery, and intestinal entozoa must have modified history to a much greater extent than we conceive. Our historians and economists do not seem even to have considered the matter. It is true that they speak of epidemic diseases, but the endemic diseases are really of greater importance. The same cause works the same evil in modern Greece. Though the country has been freed from the Turks for 70 years, yet its population has not increased very much. Athens has about 130 000 inhabitants, and Patras, the next largest city, about 40,000, and the other towns are scarcely more than large villages. The rural areas contain small and poor but not destitute hamlets, but what strikes one most in them is the absence of villas and of large hotels. Few of the wealthier people seem to live in the country. A gentleman of Athens told me that he bought a shooting box but that he was attacked by malaria when he went to stay there. The inns are comparatively small and shabby and not likely to be frequented by many modern tourists, and the methods of communication are primitive. This is very surprising, because one would think that such a country would be the Mecca of all the tourists of Europe and America who would pour their millions of pounds into it just as they do into Switzerland. But, of course, the reputation of unhealthiness possessed by many of the rural tracts is fatal; the tourist thinks twice about going to them and the innkeeper hesitates about spending his capital in a locality where he and his children may expect to be frequently ill.

Now regarding the remedy. Science has, of course, shown absolutely that the disease is carried by gnats and, in doing so, has indicated several methods of prevention. First, there is the method of excluding gnats by the careful use of mosquito nets and wire gauze screens to the windows—useful for the houses of the rich, but too costly and troublesome for the poor. Then there is the method of Koch, the cinchonisation of all the patients, by which they themselves are benefited, while the gnats do not become infected and therefore do not spread the parasites; but this implies rigorous dosing with quinine for months—a thing which patients and the mothers of children often will not submit to. But the method which I first suggested and elaborated in 1899—namely, the reduction of mosquitoes, is the one which I prefer and the one which, after seeing the conditions in Greece, I prefer more than ever. It is, of course, the old Roman plan of drainage against malaria, with this important difference—that we are now no longer compelled to drain the whole surface of a malarious area but only those small pools in which the anophelines breed. This method has the immense advantage that it can be carried out by local authorities without troubling the people; while in the end it is sure to be more economical and lasting in its effects than other methods which, I think, are apt to cause waste both of money and effort. To Greece it is most especially applicable. There the rainy season is the winter, when the mosquitoes do not breed; so that in the arid summer they can find only very few suitable breeding pools. So much the easier and cheaper will it be to treat these. They can be rendered uninhabitable for the larvæ by drainage, by filling up, by deepening, by dragging the weeds, and in the last resort by periodic oiling. Where carried out with intelligence and loyalty, as in Havana, the Federated Malay States, and Ismailia, the work has proved comparatively easy and cheap, while the results (now so well known) have been of the most brilliant kind. I think that Greece, owing to the scarcity of surface water suitable for the larvæ in the summer, will be easier to deal with than any of these places—easier even than Ismailia, with its irrigation system. It will be strange, indeed, if so intelligent a nation cannot carry out such simple measures in order to rid itself of a plague which has oppressed it for ages.

The Grecian Malaria Society has commenced the work with energy. It has investigated local conditions, has issued numerous tracts to the people, has urged railway companies to screen stations and the Government to undertake drainage. Dr. Savas suggests Government regulation of the sale of quinine in order to improve and cheapen the drug—a most necessary item. At Athens, where malaria exists only along the bed of the Ilissos, the stream has been "trained" in many places. Presently I hope that we shall see a survey made of the malaria and the local breeding places in the whole of Greece, preparatory to a general onslaught on the foe. When I was in Athens I had the pleasure of speaking to M. Theotakis, the Premier, and M. Boufidis, the President of the Chamber, and I am sure that the Government will do its best to support the campaign. But the society will have to fight many enemies, chief among which will be the incredulity and indifference of the public. I have therefore suggested that we in Britain may help it by doing something to show our support of it. The Liverpool School of Tropical Medicine has accordingly offered its assistance, which has been accepted by the King of Greece; and, under the patronage of H.R.H. Princess Christian, we have opened a list of supporters which now includes many eminent names, beginning with those of the Greek Minister in London, the British Minister in Athens, the Presidents of the Royal Society and the British Academy, the Royal College of Physicians of London, and many Greeks residing in Britain. It often happens that a little foreign support will do more to encourage a cause than much local effort can do. If any of you wish to join us we shall welcome you most heartily. You have but to write a note to me or to our secretary, Mr. A. H. Milne, B.10, Exchange Buildings, Liverpool.

When matters are in proper train every year will see the removal of a number of the little marshes which are so injurious to the country—every year will see a decrease in the malaria. I venture to say with confidence that, give us but the necessary means—and we do not require much—there is no country in the world from which we could not extirpate the disease. Hitherto we have contented ourselves with diminishing it in isolated towns. Let us now deal with whole nations. Remember that it has actually been banished from Great Britain, almost by unconscious agencies. We have only to imitate those agencies consciously. What a triumph it will be for that great science, of which all of us are the humble votaries, if she can wipe out this miasm, this defilement, from an entire country. I will not hesitate—such is our ambition. And that country is Greece. I asked a Greek friend why his countrymen did not restore the Parthenon. He replied that it was because they were unwilling to touch the sacred ruins without the assent of the whole world to whom they belonged. So also Greece belongs to the whole world. We all share in her troubles and should do our best to relieve them. Many years have passed since Byron gave his life for Greece. He attributed her misfortunes to loss of liberty. Perhaps so; but I think that an enemy more inveterate than the Turk has also destroyed her. Not least among the nations, Britain has studied to help her against her human enemies. Should we not help her now against the more potent enemy which we have discovered? That science which, more than 2000 years ago, she created is at our side urging us on. The Parthenon was the temple of Science. The great figure of Science standing before it dominated the whole of Greece. At its gates stood the figure of Hygieia, the Science of Health, whom we invoke.

BRITISH ELECTRO-THERAPEUTIC SOCIETY.—The annual exhibition of this society will be held on Friday, Dec. 14th, at the small Queen's Hall, Langham-place, London, W. The floor space will be equally divided and positions will be balloted for. Exhibitors must provide all necessary trestles, boards, tables, &c. A more or less limited supply of continuous current—at 240 volts and at 80 volts—will be available free of charge. Exhibitors wishing to show x ray tubes, &c., in operation must so arrange that the rays issuing therefrom are directed towards the adjacent walls and away from the body of the hall. This rule is for the protection of x ray workers and will be strictly enforced. The amount of space provided will be sufficient to enable the tubes to be shown working in a satisfactory manner. Floor space (about 100 square feet for each exhibitor) is provided by the society. The exhibition will be open at noon, but exhibitors can have access to the hall from 8 A.M. Light refreshments will be provided during the afternoon and evening. Intending exhibitors should apply at once to the honorary secretary, Dr. Reginald Morton, 22, Queen Anne-street, Cavendish-square, W., stating what voltage and how many ampères of continuous current they will require for their exhibits.

MOTOR-CARS FOR THE GENERAL PRACTITIONER.

BY A PRACTICAL MOTORIST.

THE Fifth International Motor Exhibition, which opened at Olympia, Kensington, on Nov. 15th, and which will remain open until the 24th, contains without doubt the finest collection of cars ever seen in this country and is well worth a visit from every medical man who can spare a few hours to examine, even in a perfunctory manner, the vast display of cars sheltered under the roof of Olympia. The medical man who is already a motorist will obviously find endless features of interest; the intending medical motorist will have an opportunity of seeing under one roof practically every make of car which is worth seeing in the automobile world and this cannot fail to be an object-lesson of practical importance. I do not propose to offer any detailed criticism of the merits or otherwise of the cars on view, which comprise all classes, from the stately car costing well over £1000 to the modest runabout at about £160. There is no doubt, however, that the mechanism of the modern car is now vastly improved, and all the reputable makers are turning out what are generally known as "reliable" machines. There is equally no doubt that the cost of cars has not materially decreased, and is not likely to decrease just at present. Makers claim that their efforts are centred upon the improvement of the mechanism of the car, and therefore prices cannot be reduced. This sounds logical, if not quite convincing. There are those who hold the opinion that so long as the demand for increased horse-power continues, and people are willing to wait and to pay for it, so long will the maker have no inducement to turn his attention in the direction of a cheaper method of output and therefore the production of a cheaper car. For the type of car which we are about to consider there are quite a number of makers whose efforts, owing to the greater competition for business that exists than in the case of the more expensive cars, are continually directed to reduction of price, and a purchaser is now able to obtain very much better value for his expenditure than was possible two years ago.

Viewing the exhibits from the standpoint of the general practitioner of average means, my experience of motor-cars and motoring—I have owned or driven most of the well-known cars since the enabling Act of Parliament was passed in 1896—leads me to the conclusion that he can now obtain a car which will answer all his professional requirements at a figure within his means. I will therefore attempt to indicate to the medical profession the type of car best suited to their needs at a cost not exceeding £225. First and foremost the car must be a business vehicle—frankly a money-earner, and therefore, save in a subsidiary character, all thoughts of the pleasure side of motoring have to be kept in the background. It will be necessary first to consider the requirements of the general practitioner, then to eliminate types of unsuitable cars, and finally to arrive at a definite conclusion.

The motor vehicle which will give satisfaction to an owner for intermittent pleasure will not necessarily perform efficiently in the varied work essential to the general practitioner's long round of visits, and it is therefore desirable to warn intending purchasers against taking too eagerly the advice of enthusiastic motoring friends outside the profession. In the swirling dust-clouds of a hot summer, through the winter's slush and mud, with the temperature 85 degrees in the shade or several degrees below freezing-point, in the heaviest gale with the snow deep upon the ground, throughout every hour of every day in the 365 which make up the year, the members of the hardest-worked profession on earth must be ever ready to respond to the call of afflicted humanity. There must be no question of having to do a number of small things before a car can be running on the road in a case of emergency, nor must forgetfulness on the driver's part endanger the continued smooth working of the comparatively costly mechanism. The initial outlay must be within the limited means of the medical man practising in a rural district as well as within those of his brother who has to cover many miles in the poorer neighbourhoods of our large cities. The cost of upkeep—repairs, renewals, petrol, lubricating oil, and incidental expenses—must be within a maximum figure; renewals must be easily procurable; and any occasional repairs should not be outside the scope of the local garage or maybe the ubiquitous bicycle repair man. The seating arrangements ought to offer the greatest possible comfort. Provision must be made for instrument-bags, &c., securely protected from the weather, together with storm-proof garments and wraps; and the vagaries of our variable climate must be met by some form of covering above the passenger. The requirement of speed on the level can be supplied by the smallest of cars, whilst the ability to climb steep hills at a good pace is only governed by engine power and consequently price. Most important of all, the engine and propelling mechanism must be simple enough to be understood and kept in order by anyone who possesses a smattering of mechanical knowledge, so that outside aid can be dispensed with and expert assistance be requisitioned only in the rare event of a serious breakdown. If all the points just enumerated could be found on any one motor to-day, British or foreign, such a vehicle would indicate the millennium of motoring. Like everything else in this world, we must be content with a compromise, with the assurance that, despite a few minor drawbacks, the purchaser of a car to-day is offered such immense advantages over the use of the horse-drawn vehicle as far to over-balance any question of waiting for the problematical perfect car of the future.

The motive power of an automobile can be derived from three sources—electricity, steam, and petrol—for we can at once eliminate paraffin as being outside the range of present use for the purpose until the right carburetter is invented. The electric brougham is so common a feature of street traffic in the West-end of London as to have ceased to arouse curiosity when it passes. It possesses the charm of absolute freedom from noise, rattle, or vibration—features which would at once recommend this type of vehicle to a professional man. For the special object we have in view electric current is impossible, because initial outlay is large, ranging from £650 up to half as much again, according to the style and finish of the carriage work and upholstery; the range of movement is limited to from 20 to 30 miles, after which the accumulators have to be re-charged from a power station with a continuous current, and this re-charging occupies many more hours than the time during which the vehicle has been in use. The cost of upkeep is also very high, whilst its usefulness is confined to comparatively level roads. The electric brougham is limited to work on first-class wood-paved or macadamised roads in large towns, because gravel roads made heavy by continuous rain need consumption of practically twice the current to cover an equal distance of smooth and hard road surface. So we can dismiss electricity from our list. Steam is a noiseless agent and possesses the great advantage over electricity that, with the cheapest steam car on the market, selling for £220, the range of movement can be extended up to a distance of 50 miles on one filling of water for the boiler and liquid fuel for the furnace. But whilst good in its way the cost of running this particular car is beyond the resources of the man of moderate means, and it lacks many needful points making for the comfort of the user. Moreover, a fair amount of technical knowledge is necessary before a steam car can be driven and kept in running order, and ceaseless attention must be devoted to such a multitude of details prior to each time of using and whilst actually in commission that the novice can all too quickly run up a big repair bill by inattention to only a few of them. There are three other steam cars in which the working has been greatly simplified as compared with the one just mentioned, but here again the first outlay places all of them outside our limit, the cheapest selling for £600, and almost of necessity compelling the employment of a paid driver to run them. Two of the three use paraffin for fuel—a matter of smaller importance now than in the past, as petrol can be bought in nearly every village in the country. Were we confined to steam the cost of fuel would have an important bearing on the matter; but, fortunately, our choice has a wider range, and, as will be presently shown, petrol forms only one of the items of running charges. This is true only if applied to the internal combustion engine, as, where petrol is burned to generate steam, it may cost as much as one penny per mile, exclusive of all other expenses. We therefore arrive at the conclusion that the gas-engine is the only one quite suited to our requirements, and we can proceed to define the all-round car for the general practitioner of moderate means.

I may premise my observations by saying that the smallest car which can be expected to do good service cannot be purchased for under £200, and that necessary lamps, horn, spare

parts, storm-hood, &c., will add at least £25 to this sum, so our expenditure must start at a minimum of £225. The majority of cars at this price have single-cylinder engines, and this brings me to a point difficult to determine as a general proposition. Circumstances both as regards the financial aspect and the district to be covered vary so enormously that a type of car one would be justified in recommending to a resident in London would be useless to a man living in the remote north of Scotland. Pounds, shillings, and pence are the pivot upon which everything else turns, and a moment's digression must be permitted to put this clearly. Those who have two or three cars will be better able to appreciate the greater prominence of annual outlay for running expenses of all kinds as compared with what may be termed the capital outlay. There is small advantage in purchasing a car for £150 if its annual upkeep should come out at 25 per cent. more than the car upon which an extra £50 had been spent originally, and this statement is of more significance when we come to consider the merits of some of the very cheap cars marketed by a few of the lesser-known firms. Competition for the motor trade is excessively keen, and for this reason it is desirable to deal with those firms who, having made a reputation, must maintain the quality of their wares, irrespectively of the price at which they are sold. If two cars are offered, one built by a well-known firm and the other by makers who have yet to achieve a reputation, buy from the former, even if they charge £25 more for the same horse-power and the cars are identical in most other respects. We must not overlook the fact that we are considering the motor-car purely from a business standpoint, and if the man who drives for pleasure is prepared to sacrifice many essential details for the sake of a particular feature, the medical man cannot afford to do so, and should leave experiments to those who have more time to spare.

For £225, our maximum for the car complete with accessories ready to drive, the limit of power will be about eight horse obtained from a single cylinder, the body seating two persons. If we can increase our price by £75 we do not thereby obtain a proportionate increase in power, but we secure the advantage of a two-cylinder engine. The man who is going to drive himself and make the occasional necessary adjustments, and is only able to devote a fraction of time to the latter purpose, is recommended to purchase a single cylinder six or eight horse-power two-seated vehicle, and he will have a good range of choice at the lower figure. The one drawback to the single cylinder engine is the vibration set up when running "light"—say, at the time a car must be pulled up for traffic stops, and the clutch has therefore to be released. To a medical man this problem of vibration is important, more particularly if his practice includes the traversing of busy streets every day in the week, and for this reason alone it is desirable to have two cylinders, always provided that the extra cost is not pared away from other essential details of the complete car. Multiplication of cylinders is provided by the maker not so much to increase power as to decrease vibration. In this respect two are better than one, four are better than two, and six best of all. If the prospective buyer can obtain rides upon a single cylinder eight horse-power and a two-cylinder of about the same power the difference in vibration between the two types will be better understood. The two-cylinder has also many other advantages which cannot be conveniently touched upon here, and the settlement resolves itself solely into that of first cost.

Next, the method by which the charge of compressed gas is ignited in the cylinder to form the power stroke must be settled. Two systems are used—viz., accumulator with high speed trembling coil and high tension magneto, a sparking plug in the cylinder head being common to both. The first permits much easier starting of the engine than the second, but in out-of-the-way districts presents the difficulty of having to recharge the accumulator frequently from some prime source of electrical energy, whilst the second generates current by mechanical means quite independently. If it becomes a question of making a choice between the two, the accumulator method should be selected for a single cylinder and even for a two-cylinder. Except upon the single cylinder car the majority of makers will supply an accumulator with coil as a standard and a magneto as an extra, and the latter is well worth the added cost of from £7 to £15. When what is termed the dual ignition system is fitted it is usual to start up with the accumulator in circuit and as soon as the engine is running at its proper speed the magneto is switched on. Ignition troubles have hitherto been the bane of the motoring novice, but such attention has been devoted to this subject in the past 18 months that a roadside trouble should never or rarely occur, provided a few minutes are occasionally given to the wiring, &c., and lubrication of the magneto bearings when one is installed.

The internal combustion engine must have some of the heat generated by the explosion carried away, the cylinder being almost entirely surrounded by water for this purpose. To take away the hot water and to bring cold in its place a circulating system of water-pump, connecting pipes and radiator is employed. It is in connexion with the latter that the writer desires to utter a most emphatic warning. Two types of radiator are installed upon modern cars—either the gilled tube or the honeycomb—and in no circumstances whatever should a medical practitioner purchase a car fitted with the honeycomb type, unless he is anxious continually to dip his hand into his pocket for repairs. It came into fashion with the advent of the racing-car monstrosity, because a little weight could be thereby saved, but it is quite out of place on a touring car of moderate power or a business vehicle such as the one which we are considering. Never mind what the dealer or maker thinks you ought to have, stand out firmly for a gilled tube radiator, and even should the car be entirely suitable in all other respects place the order elsewhere with the firm who will supply what you want.

The transmission of the power to the road wheels, whether by side chains or through the medium of a live axle, may be left to the maker, but a chain drive is far more trouble to keep in good running order. Lubrication is an important—if not the most important—detail on a car, and just a few words on this matter will not be out of place. With the great heat generated by the quick succession of explosions it can be well understood that just the proper quality of lubricant must be fed into the engine and in sufficient quantity to prevent the piston seizing. Too much oil means a trail of pungent smoke being left behind the car as it proceeds on its way and too little oil will cause the engine to stop, because it becomes hot from the friction of the piston against the cylinder or because the crank shaft and its bearings may score each other badly without the necessary film of oil between them. On the very cheap cars oil has to be forced into the engine by means of a hand plunger pump, usually fixed upon the dash-board, and if this is not done at the proper time a repair bill for £10 or £20 is the result. This is only one of the very many reasons why the so-called cheap car should be tabooed. The best method of lubricating the engine is undoubtedly by means of a mechanical oil pump forcing oil from a reservoir to a pipe on the dash-board, whence it is led away by branch pipes having adjustable sight-feeds, so that each bearing, &c., can receive a proper supply. This system can only at present be found on cars of a more expensive character than we are dealing with, but a good compromise can be found in what is known as the exhaust pressure feed device. This system is now almost universally used on well-constructed cars, its only faults being that variation of temperature may necessitate alteration of the sight-feed adjustment and that it does not cease feeding the moment the engine stops, as does the mechanical pump. If the bearings of the change-speed gear shafts and the differential bearings are also lubricated in the same manner, so much the better, but this need not be insisted upon as an essential part of the car's equipment. The petrol tank should carry at least six gallons. Beneath the car, from the front almost to the rear and extending from side to side of the framework, a detachable metal apron should be suspended, to keep mud and dirt from reaching the lower portion of the engine, gear-box, &c.

We can now deal with what may be termed the comfort side of the proposition, and it can be said at once that there is hardly a car on the market which meets the special needs of the medical man. The majority of two-seated or moderate-priced cars are fashioned with that weird contraption popularly known as the bucket seat. Copying Mr. Punch's celebrated advice, I can but say "Don't." The front seat should run straight from side to side without any projections or arms between passenger and driver; the back of the seat should be as high as that of an ordinary arm-chair and slope back at a gentle angle from base to top; the actual seat should slope slightly from the front edge down to the base of the back support, and along the front edge a small roll should be formed in the upholstery. The back upholstery

must be supported on concertina springs as well as the seat cushions; buttons and fancy trimming of any sort should be eschewed, as they form receptacles for dust in dry weather and each button makes its own little lake of water after rain. The seat cushion should be in two halves, to save throwing rugs and other impedimenta on the floor when the petrol tank has to be filled. The off side, where are usually placed the change-speed and emergency brake levers, should be fitted with a door dropping into slides fitted to the dash-board and front edge of the seat, whilst the near side should have a door hinged to the dash-board, fastening with an exterior and interior handle to the side of the main body work. Further, these two doors should be as high as the dash-board itself. I am unaware of any car which has been built with doors in this manner, except to special order; the comfort they add in wet or windy weather is so great as to make it a cause for wonder that they are not built as a standard on every car. A hood of some sort is a necessity, but is charged for as an extra at from £10 to £25, according to size and quality; £15 have been allowed for this in our original estimate of £25 for equipment. The type to select is that known as the "cape cart hood," constructed of medium thickness waterproof twill, carried upon a folding framework of ash bows and light steel clamps; this is light, always looks neat, can be permanently retained upon the car, is removed entirely in five minutes, prevents dust entering the car from the rear in summer, and if fitted with side storm curtains gives nearly as much protection from winter weather as does a closed brougham. A car destined only for town work in well-lighted streets is made more comfortable by the addition of a glass wind screen above the dash-board, and is then quite equal in comfort to a brougham, with a great saving in cost and quite 50 per cent. reduction of weight for the engine to propel; this is an extra and outside our price limit. Saving of weight is of more importance on a motor-car than the majority of buyers appreciate, as, all other things being equal, the lighter the complete car the easier it is to drive, more economical in petrol and lubricants, and the cheaper it becomes for annual upkeep. Weight, again, is the prime factor in tyre costs, and this brings us to a point around which more controversy has raged than almost anything else in the motor world. Pneumatic tyres of not less than three and one-half inches in cross section, with the very thickest of treads (known in the tyre trade as "reinforced") are desirable, and there should be no hesitation in paying extra for this size and thickness, if they otherwise are outside the car manufacturer's specification. If initial cost must be saved somewhere, and it becomes a question of purchasing a single or two-cylinder car and having cheaper tyres to procure the latter, it will be found more economical in the end to have the single cylinder and put the difference into the tyres. Pneumatics of small diameter and small cross section are a source of constant worry and expense, as, in addition to their own inherent faults, they permit too much vibration from bad road surfaces, &c., to reach the mechanism, and thus needlessly add to the wear and tear of all the working parts, to say nothing of the increased strain to the passengers' nerves. Large solid tyres are better than small pneumatics, and many practitioners who use their cars throughout the year find a considerable saving by fitting pneumatic tyres to the front wheels and solid ones to the rear. Such a compromise is only possible where the road surfaces are uniformly excellent and the speed never exceeds 16 miles an hour. On a really light car solid tyres cannot be used, because it has been designed to travel upon pneumatic tyres and would shake itself to pieces in a week if other tyres were fitted.

Only one other detail remains to be provided for, and that is a receptacle for instrument bags and cases and a case for note-books, &c. The latter can conveniently be housed in a flap-covered pocket attached to the side of the seat; to make this weatherproof it will be found advisable to have a second flap pocket of waterproof twill in which the books and very small instruments can be carried when entering a patient's residence; when again ascending the car the detached waterproof pocket can be slipped bodily into the fixed pocket, and if the latter has a simple turnbuckle fastening it is but the work of a moment to remove the note-books. On a small car the petrol tank is supported within a covered cupboard beneath the off-side or driver's seat, the space beneath the passenger's seat being used for stowing accumulators, spare parts for engine, and tools. A division between the petrol tank space and the tool space is rarely, if ever, fitted, and one flap-door hinged at the base and held in position by a spring catch at the top serves for closing in the two spaces. Convenience quite as much as comfort is essential, and the following suggestions are made to this end. The two accumulators can be placed in a box upon the off-side step; the tools, lifting jack, tyre pump, &c., can be carried in a lock-up box to the rear of the seats. Arranging a division from front to rear beneath the seats with a separate door to each will at once provide the wished for accommodation for bags, &c., in the near side space. The door to the latter is preferably hinged at the top and fastened at the bottom; carriage builders, for some inscrutable reason, fit these doors with hinges at the base, and it is a nuisance to get at them in wet weather. This division can be lined with thick rubber matting or baize, and if a few hooks are screwed into the back quite a number of things can be carried without the slightest fear of breakage from vibration. Nothing complicated or outside the regular scope of the body-builder's business has been indicated in these notes, and a car on the lines set forth should not cost a penny more to construct with such a body than the normal design for purely pleasure cars.

Presuming the car to have been purchased, the annual cost of upkeep becomes important. Do not be misled by the glib argument of the motor salesman that a car can be run at a cost of a halfpenny per mile, for the gentleman refers only to petrol and lubricating oil. These are minor items when compared with the cost of keeping pneumatic tyres in good condition or the possibility of having to repair some portion of the mechanism during the car's career. Omitting depreciation, it may be accepted as a correct statement of fact that the absolute minimum expenditure cannot possibly be below twopence per mile. This figure can only be secured provided the owner makes all his own adjustments, repairs punctures to the tyres, and carries out the small but necessary operations which can be included in the generic expression of "keeping a car tuned up." Washing down the body and polishing the metal work ought to be the work of a lad, and any big repair or adjustment can be confided to the local garage proprietor. The heaviest expense will be for tyre repairs and renewals, and with the special portable tyre vulcanising outfits which can now be purchased at a moderate figure any common-sense person can perform the simple processes for tyre mending. Side-slip can be considered as the one drawback to the use of modern motor-cars, and the most popular remedy for the trouble is to have steel-studded leather bands vulcanised to the outer covers of the pneumatic tyres. As a preventive of side-slip, these bands, or treads as they ought properly to be called, are quite successful, but they set up trouble of another kind. The leather treads have a life of about 1750 miles and then need renewal, but unfortunately the process of vulcanising the leather to the rubber appears to deteriorate the quality of the latter and it is only in rare cases that the rubber will stand re-treading with a leather non-skid band. Those who desire to run their cars economically should purchase a pair of detachable tyre chains, which are quite as effective in preventing side-slip as the leather bands, do not injure the rubber, and can be removed in two minutes when dry roads do not call for their use. They are as quickly attached, and two years' personal experience in all sorts of weather is behind this expression of opinion.

To sum up my recommendations, I suggest the purchase of a single cylinder 6 or 8 h.p. car, with seating accommodation for two persons only, fitted with accumulator ignition, gilled tube radiator, tyres 3½ inches wide, doors at each side of the body, no division between the seats, a special locker or cupboard for instrument cases, and a cape-cart hood. I again emphasise the absolute necessity of buying from a well-established manufacturer, for, in addition to the reasons previously stated, it must be borne in mind that there is always a good market for a second-hand car with a reputation for "reliability." Vehicles of little-known origin realise but a fraction of the original cost when changing hands, either privately or through the medium of an auctioneer. The design and exterior finish of coach work is no criterion as to the fitness of the propelling mechanism for a particular purpose, and in this respect the second-rate article is usually as well, if not better, painted and varnished on the outside than the more perfect car. Patriotism suggests the purchase of a British-built car, and it happens fortunately that the majority of the machines that approximate to the ideal of

price and construction set out in these notes emanate from English factories; the prospective purchaser will therefore not regret confining his choice to one of these.

THE TRADE IN SECRET AND PROPRIETARY MEDICINES.

(SPECIALLY CONTRIBUTED BY A BARRISTER-AT-LAW.)

I.

1. BRITISH STATUTES AFFECTING THE TRAFFIC.

THE trade in secret and proprietary medicines, in Great Britain and other countries, has undergone many and important changes during the past few years. In this country the proprietary medicine industry, unchecked and almost unhampered by the law and the legislature, has grown enormously. Abroad, where vested interests are less sacrosanct and there are limits to freedom of trade, the same period has been noticeable for the variety and increased stringency of the regulations and restrictions which have been imposed upon the trade by the various States. Before setting forth in detail the nature of the regulations which foreign countries have deemed necessary it will be well to indicate with some precision to what extent the laws of England regulate, directly or indirectly, the traffic in secret medicines.

In Great Britain any person who desires to make or to sell what is known to the public by the misnomer "patent medicine" must acquire a licence for the purpose. The cost of the licence is 5*s.* annually for one licensee for one set of premises. It may be obtained by anyone, whether or not he has any acquaintance with medicine or pharmacy, who makes application to the collector of Inland Revenue. In the 12 months ended March 31st, 1905, no fewer than 40,734 licences were issued in England, Scotland, and Wales to makers and vendors of secret medicines; the revenue to the State from this source was thus in excess of £10,000. The number of licensees has been steadily growing since 1895, when it was 31,592. It would be well at this stage to explain that the phrase "patent medicines" when used by the Inland Revenue and the public does not denote pharmaceutical products protected by Letters Patent under the Great Seal but preparations "held out or recommended to the public by the makers, vendors, or proprietors thereof as nostrums or proprietary medicines, or as specifics, or as beneficial to the prevention, cure, or relief of any distemper, malady, ailment, disorder, or complaint, incident to or in any wise affecting the human body." (52 Geo. III., c. 150.) Medicines of this kind are liable to what is known as stamp duty. Various Medicine Stamp Duty Acts of the reign of George III. which are still in force fixed charges of duty on every packet which might be sold of any compound preparation recommended for the prevention or cure of disease unless all proprietary rights in the same should be disclaimed. Disclosure, more or less definite, of the composition of a proprietary medicine, though not necessarily direct disclosure to the purchaser, is now virtually necessary as the alternative to the payment of duty. The duty is paid by affixing to the package a stamp label of the appropriate value. Thus on a packet sold for 1*s.* or less the cost of the stamp is 1½*d.*; on a packet sold for more than 1*s.* and not more than 2*s.* 6*d.* a 3*d.* stamp is necessary. On more costly packets the stamp may be of the value of 6*d.* or of 1*s.*, 2*s.*, 3*s.*, 10*s.*, or 20*s.* It was pointed out in THE LANCET[1] recently that in the 12 months ended March 31st, 1906, the number of such stamped packages sold was 39,861,146, the total "face value" to the public being £2,764,557, and the revenue to the State from the stamps alone being £324,112. Some proprietors of largely advertised secret medicines, which bear the Government stamp, endeavour in their advertisements to convey to the public mind the idea that the Government stamp is some guarantee of the quality of the preparation. In spite of the fact that the stamp itself bears a superscription to the contrary there is no doubt that many of the more ignorant and poorer classes do, as a fact, regard the stamp as an indication that the compound itself is of some efficacy and repute. It should be mentioned here that proprietary articles which consist of a single drug—as distinguished from mixtures or compounds—are exempt from the medicine stamp duty. It is for this reason that "Daisy Powders" (which consist of acetanilide) and certain other well-known proprietary articles do not bear the stamp. All the Medicine Stamp Duty Acts were framed to deal with circumstances entirely different from those which now obtain. Thus the revenue from medicine stamps was at first little more than £10,000, or about 3 per cent. of the revenue at the present day. It will thus be evident that the tax on proprietary medicines has assuredly not had the effect of keeping in check the demand for such articles. Nor has it lessened the profits of the manufacturers, since the cost of the stamp is in all cases paid by the consumer.

With the exception of the ancient Medicine Stamp Duty Acts there is no statute in this country which deals especially with the sale of proprietary medicines. The provisions of the Pharmacy Act of 1868, however, apply to proprietary medicines which contain one or more of the articles enumerated in the "Schedule of Poisons" which follows that Act. The schedule contains all poisonous vegetable alkaloids, such as cocaine and morphine, and other narcotics, but does not contain such articles as acetanilide, sulphonal, and trional. Secret medicines containing a scheduled poison may only be sold by retail (1) by a registered pharmaceutical chemist or chemist and druggist; (2) in the shop of a registered chemist or of a limited company; and (3) if the medicine be labelled with the word "poison" and the name and address of the vendor—but not necessarily with the name of the actual poison. All the above conditions must be fulfilled. The above provisions do not apply, however, to compounds actually enjoying the protection of Letters Patent, but this exemption is of no practical importance, as the Pharmaceutical Society of Great Britain makes a practice of applying for the revocation of any patent granted in respect of a medicinal compound containing a scheduled poison. In this the Pharmaceutical Society has been uniformly successful. It is thought by some that the intention of the legislature in 1868 was to exempt all proprietary medicines containing poison from the provisions of the Pharmacy Act but the courts have held that the wording of the statute does not support that contention (Pharmaceutical Society *v.* Piper, THE LANCET, Feb. 18th, 1893, p. 373), where "chlorodyne" was the subject of the dispute. The most important of the poisonous proprietary articles now sold are Winslow's soothing syrup, Kay's essence of linseed, chlorodyne, and Fellows' syrup. These, as has been stated, must be labelled poison and may only be sold at the hands of a registered chemist. Powell's balsam of aniseed, Owbridge's lung tonic, and licoricine formerly contained scheduled poisons but the composition of these articles was altered so as to free their sale from the restrictions imposed by the Pharmacy Act and they may now be sold without any restriction.

The Spirits Acts afford to the British public a limited amount of protection against the strongly alcoholic nostrums which have had such a vogue in the United States of America. For the sale of spirituous preparations, even if these are medicated, an Excise licence is necessary, except "for any physicians, apothecaries, surgeons, or chymists, as to any spirits or spirituous liquors which they may use in the preparation or making up of medicines for sick, lame, or distempered persons only." 16 Geo. II., c. 8 (1741). The watchfulness of the officers of Excise has proved fairly sufficient to prevent the extensive sale of strongly alcoholic preparations under the guise of proprietary medicines. Quite lately the Board of Inland Revenue decided that the sale of two popular French articles—Eau des Carmes and Alcool de Menthe—which contain a large percentage of alcohol, should no longer be permitted except by traders holding a spirit licence. Very few grocers and druggists hold this licence. There are, also, on the market various proprietary coca wines, meat and malt wines, and similar preparations, many of which are of the nature of beverages quite as much as they are of the nature of medicines. For the retail of these a wine licence (£2 10*s.* per annum) is necessary. Most grocers and many druggists have this licence.

The Merchandise Marks Act, 1887, makes it a criminal offence to apply, with intent to defraud, a false trade description to anything which is the subject of trade, manufacture, or merchandise, but this Act does not seem to have ever been put in operation as a means of punishing persons who fraudulently apply false descriptions to proprietary medicines. It has recently been suggested that this Act should be amended by the addition of a provision making it

[1] THE LANCET, Sept. 29th, 1906, p. 890.

competent for local authorities to institute proceedings; and it is certain that in the past the Act has not been administered with noticeable vigour. A new departure has during the past few weeks been made by the Director of Public Prosecutions who has instituted criminal proceedings against the makers of two quack medicines, the offence charged being a conspiracy to obtain money from His Majesty's subjects by false pretences. Many vendors of quack medicines have committed this offence in the past with impunity and it may be that the recent action of the Treasury, if successful, will have a salutary effect on these gentry in the future.

The Sale of Food and Drugs Acts (1875 and 1899) do not apply at all to proprietary medicines; and although it has recently been suggested by the British Medical Association that this exemption should be abolished, it is difficult to see how provisions such as those of the existing Acts could be set in force against articles for which there is no legal standard. It may, indeed, be possible to prove that the sale of a quack medicine is "to the prejudice of the purchaser"; but in the absence of any standard it is difficult to see how the article could be shown to be "not of the nature, substance, and quality demanded."

From what has been written it will be clear that there are virtually no restrictions in Great Britain on the sale of proprietary secret medicines, so long as these contain no scheduled poison and no considerable proportion of alcohol. By the use of the medicine stamp absolute proprietary rights and absolute secrecy with regard to the composition of any medicine whatever may be indefinitely maintained.

2. Patents and Trade-marks for Medicinal Articles.

It has been argued on occasion that the laws of property ought not to impose any limitation on the general use of natural remedies for disease, and that whenever a passage is translated from nature's infinite book of secrecy the opportunity of reading it should be given to all. There is much to be said in favour of the view that any form of medicinal treatment should be placed, as freely as may be, at the service of suffering humanity, and that the nature of every new remedy which has therapeutic activity should be made known to physicians for the common good. Now if the statutes which have already been quoted do not to any considerable extent discourage the maintenance of secrecy and of private proprietary rights in medicinal substances, these two conditions are positively fostered by the provisions of the Trade-marks and Patents Acts respectively. In considering the bearing of these Acts upon the medicine trade, it is necessary to remember the principle on which the State will grant a "franchise" to a trader. The law recognises that in most branches of industry progress is best encouraged when some material inducement is offered to the industrially progressive. When the state of civilisation or the prosperity of national commerce is advanced by the genuine invention of a new means of effecting a useful purpose the State will grant to the inventor during a period of 14 years the sole right to work his invention. At the expiration of the term of the patent thus granted the invention ordinarily becomes public property. It should be noted that a patent is not valid unless granted in respect of an invention which has in some degree the qualities of novelty and utility.

As a rule, the trader who desires to make money by selling to the general public a compound in the nature of a proprietary medicine does not take out a patent. In the first place, few formulæ for the manufacture of proprietary medicines have even that limited degree of novelty and usefulness which would justify validity in a patent. In the second place, disclosure of the formula in the patent specification would be necessary; and to make this disclosure is not the desire of the nostrum maker. He prefers to obtain the protection of the State by means of a trade-mark. Unlike the grantee of a patent, the grantee of a trade-mark need not even allege that he proposes to confer any indirect benefit on the body politic in return for the franchise which he seeks. All that he need do is to combine a selection of letters of the alphabet so as to make a word which is not in the eyes of the law descriptive of his medicine and to pay to the State a small sum of money; a trade-mark then becomes his, and his property in the word will be protected, not for 14 years only, but for ever, by the State. If trade-marks could only be applied to novel and useful articles or to articles of unique or unusually fine quality, the public might conceivably benefit. Purchasers would be protected against dishonest traders and would buy with confidence in the quality of the article branded with the trade-mark. But when, as is now the case, trade-marks may be applied by their owner to ordinary articles, which he makes in ordinary ways, or even buys "ready-made," the public benefit is more than a little difficult to trace.

And if this applies to quack medicines which are offered to the public, it applies with much greater force to the numerous chemical substances which are so freely advertised, under names which conceal their nature, to the medical profession. The advances of research in the region of organic chemistry have resulted in many additions, valuable and valueless, to the list of therapeutic agents at the service of the physician. Many of such remedies are the private property of the English, American, and German firms which have had the foresight and business ability to invent the remedies or to secure the rights therein. Of that, so far as it applies to synthetic remedies which have been discovered as the result of genuine research, no complaint can reasonably be made. But the calm appropriation, *vi* or *clam* or *ceram populo* by any trader, of any right of private ownership over an article which has been, and ought to be, common property, would seem to stand on another footing altogether, especially when the public health is concerned. There are at the present moment many firms of manufacturers who devote much thought to the perfection of devices whereby they may secure exclusive rights in this or that medicinal substance which is now public property. In some instances they boldly apply for a patent for some already known chemical substance or process, trusting that the insufficiency of the present requirements of the law with regard to novelty in an application for a patent, or the complex language of their specification, or the addition, perhaps, of some illusory "improvement," and the inactivity of other traders will enable them to achieve their object. A good example of this is to be seen in the acetyl-salicylic-acid patent case recently before the courts (Rep. Pat. C. 1905, 22, 498). In that case it was shown that a patent had been obtained, and for many years enjoyed, in respect of a chemical compound, the process for manufacturing which was perfectly well known before the patent was issued. The judge, in declaring the patent invalid, remarked that, by error, accident, or design, the specification had been so framed as to obscure the subject as much as possible. But it is rarely that this method of securing proprietary rights in medicinal substances is attempted. The easier and more usual method is to apply to the coveted remedy a trade mark consisting of some "invented" word. This may be chosen especially to suit the substance or it may be a word which the manufacturer has had "in stock" while he waits for something to turn up, to which the mark may suitably be applied. (It is quite a regular thing for a manufacturer to register some word as a trade-mark in Class 3—chemical substances prepared for use in medicine and pharmacy—without any definite idea of the articles to which he will subsequently attach it.) For example, since the acetyl-salicylic-acid patent was declared to be invalid rival firms have endeavoured "to collar" the trade in the compound by applying to it fancy trade-marks and attempting to persuade medical practitioners to use these only when prescribing acetyl-salicylic acid. Can it seriously be contended that there is such a difference between brands of acetyl-salicylic acid sold by A under the name of "aspirin," or by B under the name of "saletin," or by C under the name of "salacetin," or by D under the name of "acetysal," or by E under the name of "Xaxa," and the compound sold under its proper chemical name, as to make it desirable in the interests of the public health that the State should protect five separate proprietary interests in what is to all intents the same article, and that article a well-known and useful piece of public property? And can it be regarded as desirable that the real nature of the compound should be masked by the use of all these fancy words? To give other examples, diffent brands of hexamethylenetetramine have the following fancy names: urotropine, aminoform, formin, crystamine, uritone, and naphthamine, while adrenalin competes with suprarenalin, epinephrine, adnephrin, adrin, suprarenin, hæmostasin, rennstyptin, and paranephrin. All these, or nearly all, are registered trade-marks.

A trade-mark is supposed to be a non-descriptive word. As a natural consequence one of the chief objects of the keen businesslike trader is to secure a word which approaches, as nearly as may be safe, to the borderline between descriptiveness and non-descriptiveness. The registration of the hybrid word "tabloid"—derived from a thoroughly familiar Latin

root and an equally well-known Greek suffix—was a masterpiece of foresight and sagacity. The word so admirably describes the article to which it is applied that it springs naturally to the lips of the average person who wishes to buy compressed tablets; yet the word has been held by the Court of Appeal to be a valid mark (L. J. Ch. (1904) 73, 474) and is private property for all time. The result is that there is a permanent quasi monopoly in an article of commerce which was at one time the common property of traders. The firm which desired to monopolise the word "hæmatogen" as a trade-mark for a blood-forming medicine was less fortunate, and the word, which had been used freely in medical literature before its registration as a trade-mark, was recently removed from the register (Rep. Pat. C. 1905, 22, 47).

The examples quoted are a few among many which demonstrate the methods used to obtain private rights in public property. Thus, 309 trade-marks for medicinal substances were registered in 1905. It remains to deal with those inventions which are in fact new and are actually patented. In this case it might be thought that the original owner would be content with the monopoly which, by the patent laws, is rightfully his. 14 years would be regarded by most people as a reasonably long time during which the competition of other manufacturers should be warded off by the State. But the medicine manufacturer knows a more excellent way. He not only patents his process of manufacture but he also registers a trade-mark in Class 3 for articles to be used in medicine and pharmacy. From the very first he applies the trade-mark to the patented article, the proper chemical name for which would in many instances be impossibly cumbersome and technical. By skilful advertisement he creates a demand for his speciality and teaches the public, the medical profession, and the short-sighted portion of the pharmaceutical craft to use always the trade-mark name. The effect of this will be obvious. The patent lapses after 14 years. The trade-mark, on the other hand, is probably renewed *ad infinitum*, and the result is that a virtual monopoly is extended indefinitely. It is true that the Courts of Chancery will prevent this if they are moved to do so. "Where an article has been introduced as new and has been first manufactured under a patent, the name by which it is known becomes common property as soon as the expiration of patent rights puts an end to the monopoly in the manufacture and sale of the article." (Kerly on Trade-Marks.) This statement is based on several judgments of the court. "Linoleum" and "Magnolia" are examples of trade-marks which have been held to lapse simultaneously with the patents with which they were respectively associated. In Reddaway *v.* Barham (1886, A. C. 214) Lord Herschell stated the law succinctly as follows: "Where a patentee attaches a particular name to the production he patents, that name becomes common property as the name of the patented article. It possesses, indeed, no other name." In the Magnolia Metal case (1897, 2 Ch. 371) Rigby, L.J., said: "The manufacturer or patentee cannot by any means entitle himself to a monopoly in the use, after the secret process has been discovered or the term of the patent has expired, of the name by which the manufactured article is exclusively known while the secret is undiscovered or the term of the patent is unexpired."

Unfortunately, it is not worth while for any one firm to incur the expense of moving the court, in order that the whole community may share in the benefits obtained. So, as often as not, the monopoly persists and the public, of course, has to pay. No new phenomenon, truly, but surely a sufficiently serious matter to call for vigilant and united action on the part of those who are concerned, in the public interest and their own, to scotch, so far as may be, unearned monopolies, improper secrecy, and extortionate prices in the drug trade.

Before leaving the subject of patents and trade-marks it may be well to mention that the Comptroller of Patents, although compelled by the Act of 1902 to have the records of his office searched for "novelty" when a patent is applied for, has no statutory authority to refuse to grant a patent solely on the ground of want of novelty. Only the other day a patent was secured for the manufacture of eserine sulphite by the action of sulphurous acid on a salt of the alkaloid. This process is not only the one which would certainly be used by any chemist but has actually been several times described in print during the past 20 years or more. But proprietary rights are cheerfully granted and if anyone desires to protest it is for him to move the High Court subsequently to strike the patent from the Register. It may also be noted that in the view of a high authority (Terrell on Patents) a chemical substance is never the subject of a patent. It is only the process of manufacture which can properly be patented.

ELECTION OF DIRECT REPRESENTATIVES UPON THE GENERAL MEDICAL COUNCIL.

The Candidature of Dr. W. Bruce.

Sir T. McCall Anderson last week presided over a meeting at Glasgow at which Dr. W. Bruce of Dingwall, the present Direct Representative of the medical profession for Scotland, announced his candidature for re-election. Dr. Bruce spoke particularly in favour of an attempt to obtain a larger measure of direct representation on the Council and of advancing the present methods of medical education and training. He held that the present regulations of the Council were framed on wrong lines in so far as they seemed to postpone till too late the study of clinical surgery and clinical medicine. He believed that after studying chemistry, biology, and anatomy for some two years at most, the student besides attending lectures on surgery and practice of medicine, should be taking his clinical surgery and clinical medicine, as was, indeed, done in some cases at present. Too much time and too much interest were taken in the purely scientific aspect of medical learning and far too little attention was bestowed on practical matters. He alluded also to the present position of the English medical officer of health as requiring improvement and insisted on the necessity of security of tenure for the hard-working Scottish Poor-law medical officer.

The Candidature of Dr. H. Langley Browne.

To the Editors of THE LANCET.

SIRS,—At the annual meeting of the Birmingham and District General Medical Practitioners' Union it was unanimously decided to support the candidature of Dr. Henry Langley Browne for election as a Direct Representative on the General Medical Council, and in this district we all know well that he is specially fitted to represent the interests of general practitioners.

Dr. Langley Browne has not only spent the whole of his professional life in general practice, but he has always taken the keenest interest in all matters affecting the welfare of the profession. That he has enjoyed the confidence of his colleagues is sufficiently demonstrated by the numerous honours which have been conferred upon him. For several years he was chairman of the council of our union and afterwards our president. He has been President of the Birmingham Branch of the British Medical Association, President of the Midland Medical Society, President of the Birmingham Medical Benevolent Society, and has served on the Council of the Medical Defence Union. At the present time he is chairman of the Council of the British Medical Association and Representative of the Birmingham branch. We know him to be a strong man with a definite policy and thoroughly deserving of the cordial support of every medical practitioner.

Yours faithfully,

JAMES NEAL,
General Secretary.

Nov. 12th, 1906.

Dr. Milson Rhodes's Address.

LADIES AND GENTLEMEN,—In accepting the invitation of the South Manchester division of the British Medical Association I was to a considerable extent influenced by the fact that the whole of the North of England has only one Representative actively engaged in practice, though a very large proportion of the practitioners of England are resident here in the north and are certainly entitled to more representation than they have at the present time on the General Medical Council.

In regard to the present unsatisfactory condition of the general practitioner I believe it is largely due to the indiscriminate medical relief given by the so-called provident dispensaries and medical charities; many of the recipients of medical charity are well able to pay. The result of the present system is not only disastrous to the profession but also demoralising to the recipients, and I am strongly of

opinion that all charities should be compelled to procure a licence previous to opening dispensaries, and also that the account of all charities should be subject to audit, as is the case in the State of New York, where, as in England, the matter had become a public scandal. As chairman of the Central Poor-law Conference for England and Wales I am thoroughly acquainted with the difficulties the medical officers of unions have to contend with, and I think I may claim that I have done as much as anyone to make their lot more comfortable. If the Irish Poor law Commissioners' report is any guide to what the English Commissioners' report will be it behoves all those who are interested in such appointments to look after their own interests and take care that changes are not made which will not be to the interests of the profession.

As an alderman of the County Palatine and member of the Asylums Board I have been of use to the medical authorities of the asylums as being able to put before the public the medical side of questions that have come up for discussion. A quarter of a century of public life has made me only too well acquainted with the difficulties of obtaining reforms and I am well aware of the obstacles that are put in the path of the General Medical Council, and therefore all I can promise is that if you do me the honour to elect me I will do my best to promote the real interests of the medical profession.

I am, Ladies and Gentlemen, yours faithfully,

JNO. MILSON RHODES, J.P.

Ivy Lodge, Didsbury, Nov. 7th, 1906.

The Candidature of Mr. J. Rutherford Morison.

To the Editors of THE LANCET.

SIRS,—Last week the Northumberland and Durham committees of the North of England Branch of the British Medical Association (which manage all affairs locally connected with contract practice) met to consider the forthcoming election and decided unanimously to nominate and support Mr. J. Rutherford Morison and for the following reasons.

1. This part of the country is under a deep debt of gratitude to Mr. Morison. Although he has taken no part in the general medical politics he has given a great deal of time, energy, and money to local work in connexion with contract practice and general protection of the interests of the profession. It is fairly well known that for the last six years we have been going through a stern fight with the miners for better remuneration and terms of employment, and it is very largely due to Mr. Morison's energy and personality that we are to-day in a very favourable position, having won nearly all along the line. We desire to put this energy and strong personality to a wider use, and we believe that in inducing Mr. Morison to become a candidate we are doing the profession a good service. To the foolish theory that none but a general practitioner can represent an electorate which comprises all kinds of practitioners we are content to reply that although we have some general practitioners hereabouts who would have made excellent candidates Mr. Morison, consultant as he is, is a deliberate choice of the general practitioners of this district, and we think we know our business very well.

2. We believe the General Medical Council would be strengthened by the election of a man thoroughly conversant with the difficulties of contract practice and with the modern methods of dealing with them. Mr. Morison is a specialist in this department. Not only did he for a good many years personally engage in contract work in a large way, but as chairman of our Northumberland Committee and of the Northumberland and Newcastle Medical Union which preceded it he has made it his business to understand it from top to bottom. We believe there is no candidate before the profession who on this ground has so strong a claim on our votes.

3. His personality and professional position are such as will, we believe, impress the General Medical Council with the wisdom of our choice if he is elected. To those who do not know him we may say that he is willing to address meetings at a few of the largest centres if invited. We must ask those of our colleagues who may be unable to make his personal acquaintance to take the word of this branch of the British Medical Association as to his eminent suitability.

4. We are of opinion that for geographical reasons the north country is entitled to furnish one of the Representatives. Other things being equal, we are in hearty sympathy with the idea of geographical distribution of the Representatives. We notice that support is being asked for Dr. MacManus, Dr. Latimer, and Dr. Langley Browne on the basis of geographical distribution, but we would point out that no application of this system which leaves out of account all the country north of Birmingham can be acceptable.

Mr. Morison is working in hearty coöperation with Dr. Langley Browne, whose claims on the profession are very great, and taking the personal claims of all the candidates into consideration, along with their geographical distribution, we of this branch have decided to cordially support him and Dr. MacManus. We commend this selection to the profession in other parts of the country.

We are, Sirs, yours faithfully,

J. H. HUNTER,
HENRY SMURTHWAITE,
Honorary Secretaries, North of England Branch,
Nov. 12th, 1906. British Medical Association.

The Candidature of Mr. G. H. Broadbent.

At a quarterly meeting of the Medical Guild, Manchester, the following resolution was unanimously carried:—

That this meeting warmly supports the candidature of Dr G H. Broadbent at the forthcoming election to the General Medical Council and trusts that practitioners will do all in their power to secure his election. This meeting also entirely endorses the sentiments expressed and claims put forward by Dr. Broadbent in his address, and is confident that the interests of the profession may be well intrusted to his care.

Mr. Broadbent was nominated originally by the North Manchester Division of the British Medical Association and his committee appeal in his behalf on the following among other grounds:—

1. That he has been engaged in general practice for upwards of 25 years and his knowledge of medico-political subjects is such as to make him a desirable representative.

2. That he has had special experience in medical politics as a member of the central ethical committee, a representative at the annual representative meetings since their inception, a member of the Lancashire and Cheshire branch council, ex-president of the Incorporated Medical Practitioners' Association, and a member of the council of the Medical Guild since it began 14 years ago.

3. That he is opposed to provident dispensaries and disapproves of the profession undertaking any new contract work and has always insisted on a wage-limit in all contract work.

On these grounds his committee confidently appeal to general practitioners all over England for their support and vote for Mr. Broadbent at the ensuing election. A notice to this effect has been published, signed by J. H. Taylor, M.A., M.B. (Hon. Sec., Medical Guild and Salford Division B.M.A., Holly House, 299, Eccles New road, Salford); and R. G. McGowan, M.D. (Hon. Sec., North Manchester Division B.M.A., 1, Thomas-street, Cheetham Hill, Manchester.)

HYGIENE AND TEMPERANCE IN ELEMENTARY SCHOOLS.

MR. BIRRELL, the President of the Board of Education, received on Nov. 12th, at the office of the Board, a deputation to consider a memorandum on the teaching of hygiene and temperance in elementary schools presented by the committee of the medical profession formed in 1903 for the furtherance of the teaching of hygiene and temperance, by the British Medical Association, and by the Advisory Board for the Teaching of Hygiene and Temperance.

The deputation was introduced by Sir THOMAS BARLOW who said that the three chief points in the memorandum presented to Mr. Birrell were: first, the recasting of the general science teaching, so that the principles of hygiene and temperance could be embodied in the curriculum without constituting a new subject; secondly, the teaching of hygiene and temperance in all training colleges and to all student teachers; and, thirdly, the inclusion of hygiene

and temperance among the subjects concerning which the inspectors must report.

Sir VICTOR HORSLEY said that the physical and biological scientific teaching should be recast and should be formed on one continuous scheme from the earliest age to the time when the children left school.

Dr. JAMES MACDONALD, representing the British Medical Association, thought that a great advance in the future stamina of the race would be obtained if the principles of hygiene and temperance were taught in the elementary schools.

Mr. A. PEARCE GOULD, who spoke for the Advisory Board for the Teaching of Hygiene and Temperance, pointed out that it was not to be expected that teachers could impart instruction in hygiene and temperance without special training. He described the course of training instituted by the advisory board which he represented and asked for official recognition of their work.

Professor CLIFFORD ALLBUTT, who with Dr. G. A. HERON attended as representatives of the International Association for the Prevention of Tuberculosis, appealed to the Board of Education to contrive some method of instruction in hygiene whereby the individual will should be fortified for self-governance on the lines of healthy growth. He urged that the principles of bodily health might be made an integral part of the education of children.

Dr. HERON expressed his strong conviction that education in elementary hygiene well taught to every pupil in the training colleges would materially help to make the knowledge of how to prevent disease common knowledge among the people of this country.

Dr. H. W. LANGLEY BROWNE, Sir LAUDER BRUNTON, Mr. T. C. HORSFALL, Dr. JOHN ROBERTSON, Miss HOSKYNS-ABRAHALL, and Miss ALICE RAVENHILL also spoke.

Mr. BIRRELL, in replying, allowed that if our elementary system of education could be utilised for the purpose of implanting into the minds of the children and into the minds of their parents the principles of health and temperance it would be impossible to exaggerate the beneficial results. It had to be remembered that if the Bill now before Parliament became law there would be medical inspection and consequently there would be a greater number of visits of medical men to the public elementary schools, with the result that the visits of the medical men and the hints that the teachers would receive would in the course of time prove of great advantage. Mr. Birrell concluded by appealing to the medical profession for assistance in the matter. The system of teaching must be gradually reorganised so as to insure that the principles of health and temperance should be enforced in the schools.

Sir THOMAS BARLOW then thanked Mr. Birrell for his courteous reception of the deputation.

Public Health and Poor Law.

LOCAL GOVERNMENT BOARD.

ANNUAL REPORTS OF MEDICAL OFFICERS OF HEALTH.

Administrative County of Glamorgan.—Dr. William Williams urges in his report for 1905, as indeed he has urged for several years past, the enormous importance of improving the water-supplies in the county, more especially in such parts of it as contain the valuable minerals abounding in Glamorganshire and, consequently, a large portion of the total population. The numerous outbreaks of enteric fever which have occurred within recent years in the county, and which have, at least in some instances, been associated with water-supplies liable to specific pollution, fully justify the opinion of Dr. Williams that the time has arrived when a large comprehensive scheme, contemplating the procurement of the water from the mountain ranges north of the coal measures, should be carried out. With this object in view a Bill was promoted in Parliament during 1905 which has resulted in "an Act to empower the Glamorgan county council to make inquiries and surveys with the view to the utilisation of water-supplies in South Wales, and for other purposes," and it is to be hoped that the county council will now make good use of the powers which have been bestowed upon it. It has already, it may be added, an admirable account of most of the water-supplies of Glamorganshire in the report made by its medical officer of health in 1902. The need for comprehensive schemes such as are here in contemplation is not confined to Glamorganshire and the question of the conservation or proper use of the water-supplies of the country is a national one requiring to be dealt with by the "rivers boards," the formation of which has been so strongly recommended by the Royal Commission on Sewage Disposal. Such boards would have, it is contemplated, power to regulate the sewage disposal and water-supplies throughout the large areas over which they would exercise jurisdiction, and their work would be governed and supervised by a central bureau. The circumstances as regards Glamorganshire are unusual in that within the county itself practically all its rivers, together with the pollutions which contaminate them, have their birth. As a general rule, the rivers passing through one county have their origin, and perhaps the sources of their pollution, in another, and hence the necessity for the "rivers boards" referred to above. The rivers of Glamorganshire are much polluted by small coal and Dr. Williams reports that little has been done to abate the nuisance except in places where washing machines are in use and where the small coal contained in the washing water is allowed to settle in large tanks before the contents of the latter are discharged into the rivers. Unfortunately, this small coal has been held to cause only an "innocuous discolouration," which is not regarded as pollution under the provisions of the Rivers Pollution Prevention Acts. But, as Dr. Williams observes, this is merely an additional reason for some modification of the statute in question. The pollution caused by tinplate works has fortunately diminished owing to the fact that in nearly all the works devoted to this industry the "pickle," by the addition of scrap iron and continuous evaporation in properly constructed vats, is completely converted into sulphate of iron or "copperas."

Administrative County of Surrey.—In 1896-97 Dr. Edward C. Seaton prepared a map showing the areas of the supply both actual and potential of the several water companies and district authorities in Surrey, together with the course of the mains and the position of the several reservoirs and pumping stations. This map has doubtless proved of the greatest value to all concerned in the public health of the county, and we are glad to learn that it has been recently brought up to date and that a report dealing with the water-supply of the county is in course of preparation. We trust that this report, together with the map above referred to, will be published as a separate volume by the county council as this is the type of work to which county medical officers may so well devote themselves. The two chief sources of water-supply in Surrey are the river Thames and the chalk. It cannot be said that either of these sources is free from liability to pollution and therefore intimate knowledge is essential as to the actual risks to which they are liable and the precautions which are adopted to prevent or to diminish such risks. A glance at the geological map of Surrey suffices to show what a large amount of uncovered chalk exists in certain parts and the importance of locality as regards any given well is accentuated by Dr. Seaton's statement that some of the chalk is fissured. With reference to the quality of the water Dr. Seaton observes that if exception be made as regards the reports of the Metropolitan Asylums Board, which is instrumental in supplying with water a large population in Surrey, the information in the analytical tables frequently is only partial, and he quite truly adds, "The publication solely of favourable reports of this kind has occasionally proved misleading." He has, therefore, in his tables confined the particulars as to quality to statements as regards "hardness." Perhaps the water companies and some of the experts employed by them will take the lesson as a timely hint. Pending the issue of his special report the tables contained in the report under notice will be found of great utility.

County Borough of Derby.—Dr. William J. Howarth speaks favourably of the system of voluntary notification of pulmonary tuberculosis which was introduced into Derby in 1902. He is able, he states, to report that all cases are being notified, while medical men are of opinion that visitation of the patient by an official of the health department would be of advantage to the general public. The benefits likely to accrue from the periodical examination of school children by officers under the control of the health department are illustrated by the fact that in Derby there were discovered in the schools during 1905 893 children with

defective vision, 340 with defective hearing, 236 with abnormal conditions of the throat and nose, 262 with skin eruptions, and 169 with various defects physical and mental. It would have been instructive could figures have been given as to the number of defective children in whom the defects were capable of actual remedy. As regards the refractive defects, it seems that the parents are often too poor to provide the necessary glasses. Apparently one afternoon in each week is devoted to the examination of scholars in attendance at one or more schools—an arrangement by which each school in the borough is visited once every six months. Some useful work has been carried on in Derby since 1901 in the direction of investigating the methods of the feeding of children and the relation thereto of the infantile mortality in each group. Over 10,000 observations have been made. Of the total number visited 66 per cent. were breast-fed, 19 per cent. wholly hand-fed, and the remaining 15 per cent. were partly hand-fed and partly breast-fed. The death-rate per 1000 among the breast-fed was 71·2 as compared with 217·1 among the hand-fed and 106 among those only partly breast-fed. It is important, too, to note that from practically every cause the rates as regards the hand-fed were markedly higher than were those for the breast-fed.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

In 76 of the largest English towns 8307 births and 4533 deaths were registered during the week ending Nov. 10th. The annual rate of mortality in these towns, which had been equal to 14·6 per 1000 in each of the three preceding weeks, rose last week to 14·9. During the first six weeks of the current quarter the death-rate in these towns averaged 15·2 per 1000; the rate during the same period in London did not exceed 14·3. The lowest death-rates in the 76 towns during the week under notice were 5·9 in Burton-on-Trent, 6·5 in King's Norton and in Smethwick, and 6·6 in Hornsey; the rates in the other towns ranged upwards to 23·7 in Oldham, 23·8 in Burnley, 23·9 in Coventry, and 27·9 in Tynemouth. The 4533 deaths in the 76 towns showed an increase of 115 upon the low number in the previous week, and included 441 which were referred to the principal epidemic diseases, against numbers declining from 2570 to 515 in the nine preceding weeks; of these, 167 resulted from diarrhœa, 108 from measles, 67 from diphtheria, 43 from scarlet fever, 36 from "fever" (principally enteric), 20 from whooping-cough, and not one from small-pox. The deaths from these epidemic diseases were equal to a mean annual rate of 1·5 per 1000 in the 76 towns, and to 1·1 in London. These epidemic diseases caused no death last week in Bury, Bournemouth, Hastings, Hornsey, or in four other of the 76 towns; whereas the highest death-rates therefrom were 4·7 in Hanley, 4·9 in Preston, 5·2 in Oldham, and 8·5 in Rotherham. The 167 deaths referred to diarrhœa showed a further decline of 47 from the numbers returned in the nine preceding weeks; this disease, however, again caused excessive rates last week in Burnley, Hanley, Preston, and Merthyr Tydfil. The 108 fatal cases of measles showed a further increase on recent weekly numbers, the highest rates of mortality occurring in Stockport, Oldham, South Shields, and Rotherham. The 67 deaths from diphtheria were fewer by 11 than the number in the previous week, but showed the largest proportional excess in Reading, Derby, and Hanley. The deaths referred to "fever" showed a further decline, and caused the highest rate of mortality in St. Helens. The fatal cases of scarlet fever and of whooping-cough showed no marked excess in any of the 76 towns. No case of small-pox was under treatment in the Metropolitan Asylums hospitals during the week, no case of this disease having been admitted thereto since the end of June. The number of scarlet fever cases under treatment in the Metropolitan Asylums hospitals and in the London Fever Hospital, which had increased in the ten preceding weeks from 3042 to 4177, had declined to 4135 at the end of the week under notice; 417 new cases were admitted to these hospitals during the week, against 548, 542, and 499 in the three preceding weeks. The deaths in London referred to pneumonia and other diseases of the respiratory organs, which had been 149, 150, and 200 in the three previous weeks, further rose last week to 231, but were so many as 121 below the corrected average in the corresponding week of the four preceding years, 1902–05. The causes of 42, or 0·9 per cent., of the deaths registered during the week were not certified either by a registered medical practitioner or by a coroner. All the causes of death were duly certified in Leeds, Bristol, West Ham, Bradford, and in 54 other of the 76 towns; the proportion of uncertified deaths again showed, however, a considerable excess in Liverpool, Birmingham, Sheffield, Sunderland, Preston, and South Shields.

HEALTH OF SCOTCH TOWNS.

The annual rate of mortality in eight of the principal Scotch towns, which had been equal to 16·3 and 16·0 per 1000 in the two preceding weeks, rose again to 17·0 in the week ending Nov. 10th, and exceeded by 2·1 the mean rate during the same week in the 76 English towns. The rates in the eight Scotch towns ranged from 12·6 and 13·6 in Leith and Perth to 17·0 in Greenock and 18·9 in Glasgow. The 581 deaths in the eight towns showed an increase of 33 upon the number in the previous week, and included 48 which were referred to the principal epidemic diseases, corresponding with the number in the previous week. These 48 deaths were equal to an annual rate of 1·4 per 1000, which was 0·1 below the rate from the same diseases in the 76 English towns, and included 16 which were referred to diarrhœa, nine to whooping-cough, eight to "fever," seven to measles, six to diphtheria, two to scarlet fever, and not one to small-pox. The deaths referred to diarrhœa, which had declined from 56 to 19 in the four previous weeks, further fell to 16 last week, of which nine occurred in Glasgow and three in Dundee. Seven of the nine fatal cases of whooping-cough and six of the eight deaths referred to "fever" were returned in Glasgow; of the six deaths referred to "fever" four were certified as cerebro spinal meningitis. Three fatal cases of diphtheria were recorded both in Glasgow and in Edinburgh. Of the seven deaths from measles five occurred in Aberdeen and two in Dundee. The deaths in the eight towns referred to diseases of the respiratory organs, including pneumonia, which had been 102 and 94 in the two preceding weeks, rose again to 100 last week, but were so many as 51 below the number returned in the corresponding week of last year. The causes of 18, or 3·1 per cent., of the deaths registered during the week were not certified; the mean proportion of uncertified deaths in the 76 English towns during the same week did not exceed 0·9 per 1000.

HEALTH OF DUBLIN.

The annual death-rate in Dublin, which had been equal to 27·4 and 24·9 per 1000 in the two preceding weeks, declined again to 24·9 in the week ending Nov. 10th. During the first six weeks of the current quarter the death-rate in the city averaged 24·2 per 1000, the mean rate during the same period being only 14·3 in London and 14·9 in Edinburgh. The 181 deaths of Dublin residents during the week under notice showed a decline of 18 from the high number in the previous week, and included 12 which were referred to the principal epidemic diseases, against numbers declining from 52 to 14 in the nine preceding weeks; these 12 deaths were equal to an annual rate of 1·7 per 1000, against 1·1 and 0·6 respectively from the same diseases in London and Edinburgh. These 12 deaths last week in Dublin included six from measles, two from whooping-cough, two from diarrhœa, one from "fever," one from diphtheria, and not one either from scarlet fever or small-pox. The fatal cases of measles showed a considerable increase and exceeded the number in any previous week of this year; while the deaths referred to diarrhœa showed a further considerable decline from recent weekly numbers. Eight inquest cases and three deaths from violence were registered; and 77, or 42·5 per cent., of the deaths occurred in public institutions. The causes of nine, or 5·0 per cent., of the deaths registered during the week were not certified; the percentage of uncertified causes of death last week did not exceed 0·2 in London and was 4·4 per cent. in Edinburgh.

RUSSIAN MEDICAL MEN AND THE MINISTER OF EDUCATION.—It is announced from Odessa that the *doyen* of the medical faculty, Professor Medbieviéff, and the secretary of the faculty, Professor Blauberg, have resigned their posts on account of a conflict with the Minister of Education.

THE SERVICES.

SIR LAMBERT ORMSBY ON THE NAVAL MEDICAL SERVICE.

IN the course of an introductory address delivered at the Meath Hospital and County of Dublin Infirmary on Oct. 8th at the opening of the winter session by Sir Lambert H. Ormsby, senior surgeon to the hospital and past President of the Royal College of Surgeons in Ireland, the position of the Naval Medical Service was reviewed in very stringent terms. Sir Lambert Ormsby said:—

Only the other day one of my pupils, who is just qualified, met me in the hospital and I asked him what he was going to do. He answered, "I intend, sir, to have a try for the navy," but my reply to him was "Don't enter the service at present." Three years ago in one of my presidential addresses at the Royal College of Surgeons I drew attention very strongly to the grievances of the Naval Medical Service as they then existed. I deeply regret that the grievances and defects which I enumerated at that time have not been remedied, and in justice to our medical brethren in that service I must return to the subject again. They, of course, are precluded by the King's Regulations from mentioning or even hinting at their well-grounded grievances while in the service. I shall touch on the points I spoke of on a former occasion.

1. *Promotion.*—This question since I last addressed myself to the subject has been satisfactorily settled, though as must be expected rank for rank the executive is considerably younger than the medical officer.

2. *Foreign service.*—There is room still for considerable reform in this respect; at present there is no roster nor any method in the manner in which appointments are made, certain favoured officers going from one shore appointment to another or, what is equally bad, remaining indefinitely in shore appointments. Many of these appointments are made as a rule not for conspicuous ability but for conspicuous influence. Treatment of this sort disheartens those who have as a result of the system an undue proportion of service afloat. It does not tend to efficiency, as instead of having say 12 men equally capable of doing certain work at present only one has an opportunity afforded him of doing it. Too much service afloat to men who are keen on their work is most disheartening. The men who like the service afloat are generally those who take no great interest in their medical work. If it were known that service afloat and service ashore were fairly and equitably regulated there would be little or no discontent on this score. At present if a naval medical officer gets through a commission afloat satisfactorily he often finds that instead of a hospital he gets another ship, or else he is told he can go on half-pay.

3. *Compulsory half-pay* is to be regretted, but it is difficult to see how it can be avoided if there are more officers than appointments, unless it be by putting unemployed officers through hospital courses or study leave.

4. *Control of the sick berth staff.*—This is a very important matter and should be remedied without delay. The control of the sick berth staff on shore should be entirely in the hands of the principal medical officer, who should have precisely the same power when serving in a naval medical establishment on shore as is enjoyed by his military *confrères* in the Royal Army Medical Corps. The principal medical officers of the Royal Naval Hospitals at present have no power to deal with breaches of discipline on the part of the sick berth staff that serve under them, whether ashore or afloat. An inspector-general of hospitals and fleets, ranking with a rear admiral or with a major-general in the army, before he can get a man punished has to report him to the executive officer at the local depôt, and much time is wasted in making out written reports in connexion with the case, and in sending the offender and witnesses for a distance which, in the case of Haslar, is over a mile from the hospital.

The principal medical officer of a naval hospital should have power to award minor punishments in hospitals and sick quarters. It is ridiculous and humiliating to the profession that a senior medical officer cannot legally stop leave, award extra duty, or stop pay for misconduct among the staff of the hospital or sick berth of which he is the head, more especially when we come to consider that the punishment has often to be awarded for misconduct and neglects which took place a considerable time previously, owing to delays, of which only a naval medical officer can appreciate the significance. It is no wonder, in existing circumstances, that so many irregularities occur in large naval hospitals. It is most humiliating that a naval medical officer of distinguished rank may at any moment have to buckle on his sword, leave his ward duties, and go to a depôt to give evidence against a careless, disobedient, or drunken sick berth attendant, the punishment of whom could easily have been awarded by the inspector-general if he had the legal power on the spot when the offence was committed. The executive branch of the Royal Navy is exceedingly jealous of its privileges and prerogatives, both official and social. The executive board dreads the loss of these privileges and prerogatives and is loth to sanction any power being given to anyone outside it. However, public opinion will sooner or later throw a little wholesome light on these matters.

5. *Medical guard.*—It is the recognised custom in the present day when two or more ships are in harbour together for them to take in turn to keep "medical guard" and the ship keeping medical guard flies a special flag for the purpose. The medical guard has to remain on board and is always available in case a surgeon is required in any emergency in any ship of the fleet. This excellent system has not as yet been embodied in the King's Regulations and the result is that some narrow-minded captains who cannot resist the temptation of showing their authority still insist on always having one of the two medical officers belonging to the ship on board although there may be nothing going on in the ship that the medical officer of the guard (close alongside and capable of being on board within five minutes of the signal being made) could not attend to. The result of this is that the fleet surgeon or staff surgeon of a big battleship of this nature may find himself worse off than a junior surgeon on a gunboat. Another captain will insist on both the fleet surgeon and surgeon being on board when his ship is medical guard. In other words the fleet surgeon, ranking with a lieutenant-colonel in the Royal Army Medical Corps, is made to do the work of a surgeon ranking as a captain in the army. All this red tape is extremely galling to the medical branch of the navy, especially as no means of redress can be obtained, for if the fleet surgeon protests he is referred by the captain by the Article in the King's Regulations saying that he must obey all orders he may receive from his commanding officer. It should be clearly laid down in the King's Regulations that medical guard is to be recognised by the captains and commanding officers of all ships, thus putting it beyond the capricious exercise of executive authority.

6. *Medical surveys.*—To be an inspector-general is the ambition of most naval surgeons and it is disheartening and humiliating in the extreme to see these officers, ranking as they do with major-generals, forced to sit at medical surveys which are held for purely medical purposes under the presidency of a captain or commander of the executive branch. This is not only an absurdity and an indignity to the whole medical profession but it is a direct cause of inefficiency, for the executive officer can of his own mere motion overrule the decision of all his medical colleagues on matters as to which he is incompetent to form a judgment. Such a condition of mistrust is lamentable and is injurious not only to the Naval Medical Service but to the whole profession, for these executive officers, on retirement as admirals, &c., carry with them into civil life the same wretched opinion of the status of the medical man as they have seen in the navy. The matter is becoming one of national importance and calls urgently for reform, and we, civil practitioners and hospital teachers, with all the weight of our influence, are bound to speak, write, and agitate in a forcible way, by argument and common sense, to remove the grievances and hardships which our naval brethren suffer from. For as I have already said the naval medical officer is precluded by the King's Regulations from publicly making known his troubles. In the army the medical officers not only preside over their own medical boards but a medical officer sits as president, if senior, over all junior combatant officers, on all classes of boards.

7. *Courts martial.*—When a medical officer is tried by court-martial for any offence, professional or otherwise, his judges are entirely executive officers. It is the general desire, and it is only right, that some of the members constituting the court on such occasions should be medical officers of high rank.

8. *Salutes.*—It is painful to see the neglect shown to naval medical officers as to salutes. Junior officials constantly pass them by without saluting them. This breaks

down self-respect and the respect of the men. A fleet surgeon is not entitled to "laying on oars" or to "letting fly sheet" as is the commander who may be years his junior. In the army a medical officer of general's rank is entitled to the "turning out of the guard" like any other general, but an inspector-general of hospitals and fleets going on board a warship is not so saluted. Why, because, as the executive officers say, "he is only a doctor."

9. *Boats.*—In the matter of boats in harbour a senior medical officer has much to put up with. The captain and commander each have their own six-oared boats which are at their own disposal at any and all times, yet senior officers like engineer commanders, fleet surgeons, fleet paymasters, or naval instructors of over 15 years' seniority, all of whom rank with commanders, must put up with the same boats at the same times as the youngest midshipman or most junior warrant officer. In some ships the practice has of late obtained of putting one boat at the disposal of all officers of commander's rank to take them ashore and bring them on board at such times as are mutually convenient. This practice should easily be carried out in all ships if it were generally recognised. At times it would be inconvenient but the good sense and good taste possessed by the majority of senior medical officers would tell them when to waive their claims, thereby enhancing rather than lowering their dignity.

10. *Honours to Naval Medical Officers.*—The way in which naval medical officers have been persistently ignored in the "Honours List" is proverbial. Fancy the director-general and head of a department of over 500 naval medical officers, a man who is responsible for the organisation of a body of surgeons for the whole British Navy, to be still allowed to remain without any recognition whatever, civil or military. In fact there is not a single K.C.B. in the whole department on the active list and only one C.B. and one M.V.O. I am aware that on the retired list among the honorary physicians and surgeons to the King there are a few titles given to these officers but they are few when compared with the officers of the Royal Army Medical Corps.

11. *Cabins.*—This matter which affects the comfort of senior medical officers so much has ostensibly been settled by the Admiralty—*vide* King's Regulations, 1906, Articles 836-837, pp. 298 and 299. In the former (paragraph 2) it says—"Special cabins are appropriated for the executive officer (this means the second in command), the navigating officer, the chaplain, the medical officer, the accountant officer, and the engineer officer, the particular duties of the officer guiding the selection, and in ships as flagships for the secretary and the flag lieutenant. A cabin will also be appropriated to the second engineer officer, the position being fixed as near the engine rooms as is convenient and practicable. The appropriation of these cabins is not to be altered without Admiralty sanction." Paragraph 4, same article, states—"Officers will be allowed a cabin in the following order of priority:—(*a*) Watch-keeping lieutenants in the complement. (*b*) Engineer lieutenants in the complement who keep watch at sea. (*c*) Other wardroom officers not keeping watch in the order of their relative seniority. The subaltern of marines is always to have a cabin. Officers who have been allowed numbered cabins should be permitted to choose their particular cabins in the order of their relative seniority." Now one would have supposed that the Article (837, paragraph 2) would have settled the question in a satisfactory manner. But what nearly always happens is that when a ship is being prepared for commissioning she has a navigating officer, and one or more engineers appointed to her. These officers have an opportunity therefore of selecting their own cabins first so that on commissioning it is found that tallies marked navigating officer, engineer commanding, engineer lieutenant, are over their respective doors and these cabins are secured to them irrespectively of the fact that the medical officer may be years senior to them, and these officers have to put up with whatever indifferent cabins it has pleased some minor dockyard official to place their tallies over. In many instances the sewer pipe from the upper deck passes through the fleet surgeon's cabin and in other instances coal shutes pass through it. If corroboration of these facts be desired an inspection of the nine ships of the *Majestic* class and the eight ships of the *Royal Sovereign* class will prove their truth. I have heard that in a ship in one of the fleets fitted as a flag-ship, but not carrying an admiral (I believe there are several), the captain has ignored Article 837, paragraph 2, and insisted on the fleet surgeon occupying a cabin labeled "Fleet Surgeon," situated next the wardroom pantry where he is not only annoyed by the constant chatter and noise made by the wardroom servants but also in warm weather subjected to the annoyance of an invasion of cockroaches which swarm wherever food is prepared. Those captains who insist on their officers occupying these cabins appropriated for them invariably occupy those allotted to the admiral and turn their own cabins over to the second in command. The majority of ships nowadays are fitted as flag-ships, so that except when the flag of an admiral is actually flown in a ship the question of selection of cabins invariably crops up, and unless the naval medical officer is a man with some force of character, grit, and determination, he is sure to go to the wall, as the executive would imply by their action—anything is good enough for the "doctor."

12. *Social and professional respect.*—The editor of the *British Medical Journal* in a leading article, said—*inter alia*—"The refusal by certain commanding officers of the social recognition which is due to men who are at once officers and members of a learned profession is a subtler but not less galling grievance. This is a thing that can scarcely be dealt with by an Order in Council or Admiralty Instruction, for no authority can transform a naval officer who is a snob into a gentleman. Social recognition is largely a personal matter, and a naval medical officer who knows his work, and who, in his behaviour, shows a proper sense of the dignity of his profession may, as a rule, hope to have little trouble on that score. The social difficulty, such as it is, would disappear of itself if medical officers were given the measure of authority in their own sphere which has been shown to be absolutely essential." Lord Wolseley in his "Soldier's Pocket Book" sarcastically remarks that "medical advice is very valuable when it is asked for." Had he served in the Royal Navy he would have added—"and when it agrees with the opinion you have yourself already formed." Quite recently, and this is not exceptional, a man was reported to the officer of the watch on board a certain ship as being drunk. The officer of the watch examined the man and pronounced him to be drunk. The man thereupon requested that he might be examined by the naval medical officer; the latter gave as his opinion that the man was sober and capable of performing his duty, yet this man was kept under arrest, and when brought up for trial the medical officer's opinion was set on one side and the evidence of a sergeant of marines was taken as of more value. When the medical officer afterwards protested against this treatment he was told that "we (executive officers) are the best judges of a man's fitness for duty. All we want to know is whether or not a man is ill." It would appear that a medical officer's opinion is only of value when it supports the opinion already formed by the prosecutor.

There are many other petty annoyances which irritate the naval medical officer and to which time will not permit me to allude, but a little rearrangement could easily remedy these matters without any loss of discipline or efficiency. The present director-general (Inspector-General Ellis) has done much to improve the service and I know he has the interests of the service at heart, and is only too anxious to see his branch brought into efficiency and popularity. But I have no doubt that when he suggests improvements he is stopped by the Treasury, which will not sanction any improvement that costs additional money. The Government yearly expends millions on the building of warships intended to inflict death and suffering on our fellow men if our interests should so demand. How much more in the cause of humanity should they be willing to spend a few thousands on a branch of the service the mission of which is to prevent or cure disease and alleviate the suffering inflicted by shot and shell on our fighting men. If the present director-general fails to induce the Admiralty and the Treasury to amend these grievances by mild expostulation these authorities will be forced in the long run to yield, because men will not go where discontent and limitation of status are maintained. In the end the Admiralty will have to follow the example of the army and at once accede to the suggestions of an energetic and independent civilian Advisory Board, constituted on the same lines as that of the army but called in the navy the Medical Consultative Board. The Royal Army Medical Corps now gets plenty of well-qualified candidates but in the Naval Medical Service there is a deficiency of over 50 surgeons. If many of these grievances are not removed shortly the remedy is simple and in your own hands. Avoid the Naval Medical Service for the present, which will compel the authorities, in order to get good men, to rectify the glaring defects by

placing the naval medical officer in his proper position and giving him in all fairness equal advantages socially and professionally with his less scientifically educated executive brother officer.

[Sir Lambert Ormsby here gave some valuable words of advice to the students who were commencing their studies. He laid great stress on the necessity for diligence and perseverance and concluded his address as follows:—]

On entering the hall of this building two marble busts are presented to your view. On the left you will see the bust of one who was once amongst the foremost of physicians, I need hardly say I allude to the illustrious name that was a household word amongst the scientific men of Britain, I mean the name of William Stokes, whom I am proud to say, was my friend and teacher. On the other side of the hall you have before your view a memorial of worth that has also departed from amongst us, the bust of one of Ireland's greatest surgeons, Sir Philip Crampton. It may not be within reach of your abilities to emulate the success these two leaders of medical and surgical science achieved, but you can at all events catch a share of their spirit of untiring labour, high purpose, and magnanimous self-sacrifice, and in conclusion I cannot give you better or sounder advice than to ask you to follow their example and endeavour to do likewise.

ROYAL NAVY MEDICAL SERVICE.

THE following appointments are notified:—Fleet Surgeon: J. Moore to the *Cambridge*. Staff Surgeon: T. W. Philip to the *President*, for three months' course at West London Hospital.

ROYAL ARMY MEDICAL CORPS.

Captain L. E. L. Parker has assumed the duties in connexion with the Committee on Physical Training at the War Office. Lieutenant-Colonel H. S. McGill has left the London District for duty in India. Lieutenant-Colonel T. J. R. Lucas, C.B., has left Aldershot for India.

ROYAL ARMY MEDICAL CORPS VOLUNTEERS (LONDON COMPANIES).

Medical arrangements for that part of the route taken by the King and Queen of Norway in their visit to the City on Wednesday last, Nov. 14th, extending from Paddington station to the Guildhall, were in the hands of the London District of the Royal Army Medical Corps Volunteers (London Companies), under the command of Lieutenant-Colonel Valentine Matthews. Three ambulance stations were formed for the reception of casualties, but it is satisfactory to know that the accommodation was not required.

THE DISCHARGES FROM NETLEY HOSPITAL.

It is impossible to avoid sympathising with the aim and object of the course taken by Mr. Corbett and Lord R. Cecil in bringing this subject to the notice of the House of Commons last week. Mr. Haldane might be, and no doubt was, perfectly logical in saying that permanently sick and afflicted soldiers could not be maintained at Netley because that hospital was instituted, and was required, for the cure of disease and not as a refuge for the incurable, for which purpose it was never intended. It is clear nevertheless that these unfortunate soldiers must be provided for somewhere at the cost of either the ratepayer or taxpayer. They have, it may be assumed, lost their health and become permanently disabled in, and by, their army service, and to consign them to the workhouse seems to be unjust, not to say anything of the very undesirable influence this would have on recruiting. It is admittedly, however, a matter of much difficulty which concerns the past quite as much as the present Government, and has nothing to do with party. Now that attention has been called to it we hope that some arrangement will be effected. It is a poor prospect to hold out the workhouse to the intending soldier as the possible end of his career.

THE CHIEF MEDICAL INSPECTOR OF THE RUSSIAN FLEET.

The Chief Medical Inspector of the Fleet, Court Physician and Privy Councillor Dr. Vladimir Kudrin, who is also honorary member of the St. Petersburg Pharmaceutical Society, has just been decorated with the Order of St. Vladimir of the First Degree. He is 72 years of age and on June 20th, 1904, adds the *Pharmatz Journal*, he celebrated the fiftieth year of his medical career.

Correspondence.

"Audi alteram partem."

THE "SACCULAR THEORY" OF HERNIA.

To the Editors of THE LANCET.

SIRS,—During the last seven years Mr. R. Hamilton Russell has developed in your pages a new theory of hernia.[1] The chief merit of his work lies, however, not so much in the theory he has formulated as in the "facts" he has discovered, some of which require a rather close examination.

It will be well at the outset to state briefly wherein Mr. Russell's theory of hernia differs from the one which is generally accepted as true at the present time. Most of us believe that two conditions are necessary for the production of a hernia: (1) a single or repeated sudden rise in the intra-abdominal pressure; (2) a weak point in the belly wall. Mr. Russell also holds that two conditions are necessary: (1) a rise in the intra-abdominal pressure; (2) a diverticulum of peritoneum within the belly wall. In the current theory the prolapsed visceral sac is carried outwards in front of the viscus and is a consequence of the prolapse of the viscera; in Mr. Russell's theory the hernial sac is pre-formed and is a cause, not a consequence, of the hernia. If Mr. Russell's theory is right, then, as he justly states, we must modify profoundly our conception of the cause of hernia and the principles in which we apply treatment for its cure. It is therefore of the utmost importance to examine the basis of fact on which Mr. Russell's theory is founded. For the main part his theory rests on a knowledge of embryological fact and one would naturally expect that he would have made himself familiar at least with the elements of a human embryology. One has only to turn to the diagram which he published in his fourth article in support of his statement that the sac of a femoral hernia is of developmental origin[2] to form a fairly accurate conception of his embryological knowledge. In that diagram he represents the buds of the lower extremities as growing out one on each side of the umbilicus of the embryo; an outgrowth of the peritoneal membrane is shown within one of these buds—the embryonic basis of a femoral sac. To account for that diagram it is necessary to suppose one of two things—either that nature had suspended the normal laws of development during the growth of the embryo represented by Mr. Russell or that it was drawn from an embryo which had its sole development in Mr. Russell's imagination. Which it was I must leave for Mr. Russell to explain to the readers of THE LANCET. No embryologist has seen the limb buds grow in such a position or ever seen a diverticulum of the peritoneum within the limb buds, nor is such an inclusion of the peritoneum easily conceivable.

Although embryology gives Mr. Russell no support in supposing that a femoral sac may be formed during the outgrowth of the leg buds, it was still possible that these sacs might be produced in some unknown manner towards the end of fœtal life. In a series of fœtuses, over 70 in number and varying in age from the sixth to the ninth month, I searched for these femoral diverticula; I did not find even the trace of one. On the other hand, Mr. R. W. Murray[3] found that these sacs occurred frequently in adults. Out of 100 bodies examined he found a femoral sac on the right side 13 times and on the left side nine times. Mr. Murray agreed with Mr. Russell in regarding such femoral sacs as of congenital origin. Were this the case, I ought to have found in my series at least ten individuals in which a femoral diverticulum of the peritoneum was present. Some years ago, while investigating the nature of Glénard's disease, I became familiar with the diverticula which have been described by Mr. Murray. In my series of bodies these so-called femoral sacs occurred with a higher degree of frequency than in Mr. Murray's series. They occur more frequently in old people than in young people; they occur chiefly in people who have been the subjects of phthisis or emphysema, or of any condition which may have given rise to fits of coughing. Femoral diverticula are exceedingly rare in children; of 360 cases of hernia in children Mr. H. J. Stiles found only one of the

[1] Mr. Russell's sixth communication to THE LANCET on the Sacccular Theory of Hernia appeared on Nov. 3rd, 1906, p. 1197.
[2] THE LANCET, March 12th, 1904, p. 708.
[3] THE LANCET, Feb. 10th, 1906, p. 363.

femoral form—in a girl, aged eight years.[4] Mr. Murray's statistics, as well as my own, show that these diverticula are of much more frequent occurrence in the middle-aged and old than in the young—a fact pointing clearly to their acquisition during the course of post-natal, not of pre-natal, life as Mr. Russell supposes.

In his last contribution to THE LANCET[5] Mr. Russell is able to state "that there is not a single fact at our disposal which, if scrutinised closely enough, is not at once in revolt against the traditional view as to the etiology of hernia and in complete harmony with the saccular theory." The opposite is the case. There is positive proof that embryonic femoral diverticula are purely imaginary; the positive proof that they are not found in the newly born and the further proof that they become common only as middle life and old age are reached, is clear proof that femoral sacs are not the result of developmental processes affecting the embryo or fœtus but of pathological processes affecting the adult.

It is scarcely conceivable that a "saccular theory" of hernia could be formulated by anyone familiar with the anatomy of the groin or with the extent to which the lower contents of the abdomen are subject to pressure during the lifting of heavy weights, periods of straining, or in prolonged fits of coughing. Of all the layers which form the belly wall in the neighbourhood of the femoral ring or over the internal abdominal ring, the peritoneum offers the least resistance to the formation of a hernia. So lax is the subperitoneal tissue in this region, so moveable is the peritoneum, that a very slight degree of pressure is enough to force the peritoneum outwards in the form of a sac, provided there is a break in the continuity or localised weakness in the belly wall at the point where the pressure is applied. In many people the femoral ring and internal abdominal ring are the sites of deficiency or weakness; they are the weakest points in the belly wall and therefore the first to give way under intra-abdominal strain. Instead of "all the facts at our disposal being in revolt against the traditional view" of hernia they are in complete agreement with it and cannot be harmonised with Mr. Russell's theory; we know that the femoral and internal abdominal rings are weak points: we know that in certain conditions the contents of the lower abdomen become subjected to high pressure, sufficient to force the abdominal contents through these weak points and carry the peritoneum in front in the form of a sac. All the evidence at our disposal points to the coincident formation or pre-formation of a peritoneal sac as the least essential point in the pathology of hernia; the essential fact is the weakness or deficiency of the abdominal wall through which a diverticulum of the peritoneum can be so easily forced. Every fact, embryological, anatomical and pathological, when closely scrutinised, is in revolt against Mr. Russell's theory.

It may appear to Mr. Russell or to his supporters that although the "saccular theory" of hernia is inapplicable to the femoral form it may still be valid for all the forms of hernia that occur within the inguinal canal. It is clear from the description which Mr. Russell gives of the development of that canal[6] that he has not a first-hand knowledge of the manner in which the canal is formed. It is only fair to Mr. Russell to quote his own words:—

> The slender tube of peritoneum is at this time imbedded in a mass of mesoblastic tissue that is performing rapid evolutions in its progress towards the ultimate formation of a perfect inguinal region and scrotum. As a result of this circumstance apparently we find that the funicular process becomes, as it were, caught here and there by the neighbouring structures and dragged by them into anomalous and unusual positions. ..... This is doubtless the correct explanation of the great variety of secondary acculations and other irregularities that are observed in the funicular process with extreme frequency. ..... To this proneness to irregular acculation of the funicular process we are indebted for all the named varieties of inguinal hernia.

It is strange that one who seeks to revolutionise our conception of a whole field of surgical knowledge on a basis of embryological discovery has not sought to make himself familiar with the current use of even the most elementary embryological terms. The term "funicular process," employed, so far as I know, solely as a term for the tube of peritoneum which connects the tunica vaginalis with the peritoneal cavity, he employs as the designation of the whole processus vaginalis. I have examined the processus vaginalis in upwards of 100 human fœtuses, but I have never seen any evidence of "a mass of mesoblastic tissue that is performing rapid evolutions," nor have seen, read, or heard of anyone who has seen, the funicular process "caught here and there by the neighbouring structures and dragged by them into anomalous and unusual positions." We will willingly wait until Mr. Russell can supply us with a more accurate description of "this proneness to irregular acculation of the funicular process." Until that time it will serve no useful purpose to discuss the embryological basis on which rests Mr. Russell's saccular theory of hernia.

I am, Sirs, yours faithfully,

London Hospital, E., Nov. 3rd, 1906. A. KEITH.

[4] Brit. Med. Jour., Oct. 1st, 1904.
[5] THE LANCET, Nov. 3rd, 1906, p. 1198.
[6] THE LANCET, Nov. 3rd, 1906.

SO-CALLED VIRULENT SYPHILIS AND ITS TREATMENT.

To the Editors of THE LANCET.

SIRS,—May I be allowed to make a few remarks on Colonel F. J. Lambkin's interesting article in THE LANCET of Nov. 3rd? 1. In the first place Colonel Lambkin defines "malignant syphilis" as "that form of the disease which is associated with an indurated sore, which, probably becoming phagedænic, is followed by rupial ulceration of the skin, nodes, caries, and necrosis of bone, and later by visceral lesions, cachexia, anæmia, and profound debility." I venture to point out that such cases would be classed by most of the continental syphilologists as *syphilis gravis*, in distinction to *syphilis maligna*, which is generally understood to mean an early tendency to severe ulceration of the skin occurring soon after the chancre. Professor Neisser[1] defines malignant syphilis as "a severe form of the disease characterised by certain symptoms differing rather in their nature than in mere severity from the usual forms of the malady. It will be understood, therefore that every case of severe syphilis must not be included under the designation of malignant. For example, when syphilis is rendered a dangerous affection on account of the relation of the organs attacked, or by reason of some previously existing morbid condition, the term 'malignant' is not appropriate. The term 'syphilis gravis' is more suitable in such forms of the disease." 2. Colonel Lambkin gives the following causes of malignancy: poor physique, bad hygiene, malaria, renal disease, alcoholism, insufficient or delayed treatment. Neisser, however, regards malignancy as due to a "peculiar susceptibility of the affected person," and denies that it is due to debility, alcoholism, or to such diseases as gout, diabetes, or nephritis. Haslund[2] suggested the name "*syphilis ulcerativa præcox*" instead of *syphilis maligna*, as the latter term has been confounded with cases of early or precocious tertiary syphilis. 3. Colonel Lambkin states that "some of the greatest authorities" advise mercury to be withheld till secondary symptoms appear. I think it is generally agreed by the great majority of syphilologists that syphilis should be treated *as soon as it is diagnosed*, a point which was urged by Fournier many years ago. In cases of doubtful chancre it is, no doubt, wise to postpone mercurial treatment, but such cases should now become less since the chancre can be diagnosed by the presence of the spirochæta pallida (assuming this to be the pathogenic microbe of syphilis). 4. Colonel Lambkin states "that mercury given internally over any lengthened period in any case of syphilis, by upsetting the digestive apparatus, sooner or later brings about depletion of the system generally." Against this are the facts that Professor Fournier and Mr. J. Hutchinson have treated their patients as a routine method by the ingestion of mercurial pills (protoiodide and grey powder respectively) for upwards of 40 years and have seen no reason to abandon this method. Although admitting that the method of intramuscular injections of mercury is a most valuable addition to the therapeutics of syphilis (especially in the case of the army and navy or when dealing with batches of prostitutes), I think that the method of ingestion is still the most suitable for the prolonged administration of mercury over several years. Private patients can hardly be expected to indure mercurial injections for the whole period of treatment (which should last three or four years), and this method should be reserved for the periods during which active symptoms are present or when grave complications arise. As Fournier[3] remarks, "mercury, when properly administered, always enters the system whatever the method adopted, and the

[1] British Journal of Dermatology, January, 1897.
[2] Archiv für Derm. und Syphilis, March, 1897.
[3] Traitement de la Syphilis, second edition, 1902.

hypodermic method, from this point of view, is not distinctly superior to any other method."

I am, Sirs, yours faithfully,

New Cavendish-street, W., Nov. 5th, 1906. C. F. MARSHALL.

THE SOILING OF THE LOAF.

To the Editors of THE LANCET.

SIRS,—I have no doubt many a householder interested in public-health questions is grateful to you for your recent article under the above heading. In this conservative old country it seems to be quite possible that public opinion has never been directed to this evil since Englishmen began to consider questions of domestic health, and since paper bags have been so inexpensive. Why should not the baker deliver a loaf of bread in a bag just as if it were a bun or a cake? Why should bread be taken to the customers' houses *for selection?* This is not done with regard to other articles of food supplied from shops, though it is a habit of street hawkers. Why does the cook or other servant want to prod the loaves on delivery with her unwashed hands? To feel if the selected loaf is crisp, to make certain that the baker is not substituting a stale article for a fresh one, or is it merely a conventional excuse for prolonging a flirtatious interview? You point out the risk which bread runs from contact with the baker's coat or handkerchief or with the mud or dust of the street, but there are other dangers to which the basket of unprotected bread may be subjected. A careful boy hangs his basket on the area railings while he is chatting with the maids, but it is no uncommon thing to see a basket waiting on a muddy, sputum-stained (? tuberculous) pavement, exposed to the urinary attentions of canine passers-by. For the needs of my own household a provider has been found who sends us "Farm-house" bread, each loaf wrapped in a paper bag, for which we pay nothing extra. I presume there are many bakers who would do this if invited by their clients. I am, Sirs, yours faithfully,

F. M. SANDWITH, M.D. Durh.

Cavendish-square, W., Nov. 13th, 1906.

To the Editors of THE LANCET.

SIRS,—While you are advocating more purity in our bread-supply, any morning between 6 and 7 o'clock at a large bakery establishment there may be seen standing on the pavement in shallow trays, not so high as the loaves they contain, the morning delivery awaiting storage in the carts. The rotatory road-sweeping machines pass by, scattering upon them in dry weather the dust of the street, and the pavement sweeper goes in and out among the trays with his brush, completing the dosage of germs. One morning lately I saw an assistant throw one of the loaves into a street corner at a passing cat, which loaf was then carelessly included in the stock. As this sort of thing may be of common practice in London, as you have the interest of the community at heart you may be glad to have this testimony from a frequent eye-witness who regrets he has not the power you have in the matter to put a stop to it. I know nothing of the bakery or its owners who probably themselves are quite unaware of the evils involved in it.

I am, Sirs, your obedient servant,

Clarence Gate, N.W., Nov. 9th, 1906. H. J. HUGH, Major.

MORAU AND "JENSEN'S TUMOUR."

To the Editors of THE LANCET.

SIRS,—Will you allow me to call attention to a typographical error in the abstract of my recent communication to the Pathological Society, "What is 'Jensen's Tumour'?"[1] in which the discoverer and original investigator of this interesting malady is referred to as Moran, instead of Morau? The just claims of Morau as the discoverer of this malady have been so generally overlooked in this country and in Germany that the malady he discovered and experimentally investigated is now commonly known as "Jensen's tumour," and this kind of misconception has lately received its apotheosis at the *hands* of the Council of the Royal College of Surgeons, who have just awarded the Walker prize to Jensen as its discoverer. Under these circumstances, I think it would be well if Jensen, recognising the fictitious state of things attaching to this award, were gracefully to decline its acceptance.

I am, Sirs, yours faithfully,

Clifton, Bristol, Nov. 10th, 1906. W. ROGER WILLIAMS.

[1] THE LANCET, Nov. 10th, 1906, p. 1285.

THE CASE OF MR. PEERS: A MISCARRIAGE OF JUSTICE.[1]

To the Editors of THE LANCET.

SIRS,—In view of the marked injustice of the verdict in this case and in order to emphasise the sympathy of his professional brethren it is proposed to raise sufficient money to defray the cost of Mr. T. H. P. Peers's defence and to pay the damages awarded. A list will be published in THE LANCET of those gentlemen who have already promised assistance, and in the meantime any further donations will be gratefully received and acknowledged.

I am, Sirs, yours faithfully,

C. H. PRING, M.A.,

278, Old Kent-road, S.E. Honorary Treasurer.

MUNICIPAL MUDDLES.

To the Editors of THE LANCET.

SIRS,—In THE LANCET of Oct. 13th I notice that under the heading "Municipal Muddles" you make reference to the action of the Westminster district surveyor. Would you kindly note that the Westminster District Surveyor is not an official of the Westminster City Council but of the London County Council, and that the whole matter referred to is one which does not in any respect concern the Westminster City Council or come within their jurisdiction, but is entirely a matter under the control and administration of the London County Council. I have deemed it necessary to write you as I find that your paragraph has been generally taken to refer to the Westminster City Council.

I am, Sirs, yours truly,

C. SPENCER-SMITH,

Chairman of the Works Committee of the Westminster City Council.

Palace-street, S.W., Nov. 13th, 1906.

HYPOCHLORITES PRODUCED BY ELECTROLYSIS AS DISINFECTANTS.

To the Editors of THE LANCET.

SIRS,—You say in your remarks on our recent paper that you believe with Dr. Klein that the hypochlorites are powerful disinfectant agents even in the presence of organic matter. If you will refer to *Public Health*, October, 1906, you will see that Klein finds for chloros (the strongest solution of hypochlorites offered to the public) a carbolic coefficient in water of 21·0, but in urine 2·2 or 0·8, according to the conditions specified.

Anent your remarks on the inconsistent statements of certain bacteriologists who have worked with the method of standardisation used by us, it is quite true that several observers have obtained varying and various results. These discrepancies are the fault of the observer, not of the method. We have shown conclusively that where the conditions, as enumerated in our paper in *Public Health* of March, 1906, are strictly observed, the results are uniform.

We are, Sirs, yours faithfully,

DAVID SOMMERVILLE.

Nov. 6th, 1906. J. T. AINSLIE WALKER.

THE AMERICAN ROENTGEN RAY SOCIETY.

To the Editors of THE LANCET.

SIRS,—Your readers may be interested in some account of the annual meeting of this society which was held at Niagara Falls, New York, on August 29th, 30th, and 31st, at the Cataract Hotel, under the most perfect conditions of weather and surroundings. The attendance of members and visitors amounted to about 200, nearly all the States of the Union being represented as well as some foreign countries. The way to the large room where the meetings were held led through an ante-room arranged for the exhibition of radiographs, which is always an important feature of the annual meeting. No one could help being at once struck with the high degree of excellence which has been attained in this

[1] A brief report of this case was published in THE LANCET of Nov. 10th, 1906, p. 1301.

respect by our American colleagues. Indeed, it would seem that we in England might learn much from a careful study of their methods. In radiographs of the renal region the prints clearly showed the outline of the kidney itself, the psoas muscles, and even the texture of the bones in practically every case, and this was the more remarkable when one ascertained that such results were the outcome of very short exposures, varying from five to 20 seconds and, more often than not, without the use of compression or other method of fixation. It would be unfair to single out any one member's work for special mention, seeing that all the work shown was deserving of such recognition, but I may be allowed to refer to the beautiful plates which were used to illustrate the annual address of the President, Dr. Henry Hulst. He uses plates large enough to take in practically the whole trunk, and his subject was "Roentgenology of the Stomach and Intestines." These plates were quite the finest of the abdominal cavity that I have ever seen. His method is first to inflate the stomach with gas and after taking two radiographs—one erect and one lying on the side—he gives an ounce or two of bismuth and two more radiographs are taken. A third pair are made after an interval of five or six hours, the patient abstaining from food or drink in the interval. By the study of these radiographs an accurate record of the position, degree of dilatation, and muscular efficiency of the stomach can be obtained. A radiograph taken on the following day will usually show the various parts of the colon with a clearness and accuracy that are surprising. On passing into a side room of large dimensions where the apparatus was shown, it began to be apparent how these results were obtained and a few remarks on the technique may be interesting.

In the first place, the Wehnelt break is universally used for radiography, other forms being reserved for therapeutic purposes. In the second place, American radiographers have boldly attacked the coil as constructed on traditional lines and remodelled it so as to be capable of a very large output of energy. The first notable thing to strike one is the unusually large size of the primary coil and I found that the core instead of being built up of soft iron wires was made of the highest grade of transformer steel plates, about a hundredweight of which would be used for the core of a 15-inch coil. This is wound with heavy copper wire, frequent tappings being taken off and brought to terminals on the end of the primary tube. In this manner the self-induction can be quickly altered in the most efficient way. The primary current varies from 20 to 40 ampères or more at 220 volts. The secondary coil is wound with coarser wire than usual and the total number of turns is kept low so as to prevent the choking effect of the secondary reaching so high a value as seriously to limit the output. What is sacrificed in turns of wire is made up by the intense magnetic flux from the large primary coil. The resistance of the x ray tube is never allowed to exceed that of a parallel spark gap of three inches, and with such a coil as I have described the current through the tube sometimes runs up to no less than 15 milliampères. Of course no tube can stand such a current for long, but exposures become seconds where minutes were necessary before and it is found that while more destructive to tubes the results are so superior as to justify the extra expenditure.

With regard to the papers, some 30 of these were read in the course of the three days on which the meetings were held, embracing every branch of the subject. All these papers were of a very high order and the keenness of the discussions which followed each was especially noteworthy. These will all be published in a bound volume in due course, a limited number of which will probably be available to medical men in this country. The lesson which has been brought home to me as a result of my visit to Niagara Falls is that, contrary to expectation, the x ray work which is being done in America is as good as, and in some respects better than, that in this country, and that to continue to ignore or in the smallest degree to discredit the work of our American colleagues is to do ourselves much more harm than good. As in every other branch of medicine they have opportunities and encouragement, both financial and otherwise, for the study and development of this work to an extent not even dreamt of in this country. They also receive much more help and encouragement from their medical colleagues, standing on an equal footing with the other members of the staffs of the various hospitals which have electrical and x ray departments. Individuals working in such circumstances are bound to do better work and to make more rapid progress than others not so fortunately situated. In this country any progress that is made is almost entirely the result of individual effort and monetary outlay. The medical man who elects to take up this branch of work as a specialty at once descends to a lower plane in the eyes of his colleagues, from whom he receives little or no encouragement, and if he is appointed to take charge of the electrical and x ray departments of a large hospital he is not considered a fit and proper person to be admitted a full member of the staff of that hospital. Only a few years ago it was freely admitted that x ray work and x ray apparatus in England were superior to those in America. As a result of my visit I am convinced that that is no longer true, and for the reasons above given, among perhaps many others, x ray workers in America have caught us up and possibly have gone somewhat ahead.

I am, Sirs, yours faithfully,

RADIUS.

A BLACK LIST FOR MEDICAL MEN.

To the Editors of THE LANCET.

SIRS,—It was stated some little time ago that a list is to be published in St. Louis of 15,000 persons who have neglected to pay the accounts of their medical attendants, and there is no doubt but that such a procedure has much to be said in its favour. This method of placing medical men on guard against dishonest individuals has been in vogue in several of the larger American cities for a considerable period and it is, I believe, the opinion in these places that the experiment has been attended with such a degree of success as to have justified its introduction. The conditions in the United States with regard to the relations between medical men and their patients and the modes of payment, or of evasion of payment, of accounts possess sufficient points of resemblance to warrant the trial of a like scheme in this country. At least, this much is certain: that in both countries the payment of the medical man's just dues is frequently evaded, sometimes thoughtlessly and sometimes shamelessly. The medical profession as a class is more often victimised for one reason or another than any other class of the community.

The only medical practitioners who can rely absolutely upon receiving their dues are those who conduct open surgeries or dispensaries on purely cash principles and to perhaps a lesser extent consultants. Other medical men make bad debts to an extent which would considerably surprise the public. It is stated not to be an unusual discovery to make during negotiations for the sale of a practice of, say, £800 a year that the vendor has to his credit in his books at least £1000 more than he will ever obtain save by rigorous legal means, and by the application of such methods no more than one-fifth of the sum would probably be recovered. I have personal knowledge of one instance in which a medical man died who was owed by various patients between £2000 and £3000, of which not more than one-twentieth was recovered by his heirs. Undoubtedly there are many similar instances. Again, there are practices which may be nominally worth some thousands of pounds a year, but a very substantial percentage, in certain cases amounting to perhaps as much as 25 per cent., will never be collected. As a matter of fact, a percentage is struck off from the gross income every year by most medical men as a loss, such percentage varying from about 7 to 25 per cent.

The truth is that when a person is sick the medical man is called in or consulted immediately and the question of payment is, as a rule, not considered. The medical man, when the demand is made upon his services, attends the call because he believes it to be his duty to do so and for the reason that it is in accordance with professional routine. This is done without any particular regard to the person who may require his services. In these circumstances on occasions a small portion of what is due to him is received, while not infrequently he receives nothing at all. The fact, too, must be borne in mind that in the case of wage- or salary-earning classes the aid of the medical man may be sought at the very period at which the income is at its lowest, the sickness which, on the one hand, causes the incurring of the debt, on the other hand is the cause of the loss of wage or salary. When also one considers the indifference with which a large section of the public regard certain of their debts and the genial way in which many people leave the payment of the medical man's bill to the last—although wine merchants and tailors are said to suffer in a similar manner—it can be no cause for surprise that medical men make bad

debts. Nevertheless, there would seem to be no valid reason why they should submit tamely to treatment which members of no other profession or of scarcely any trade would tolerate for a moment. The fact is too well known to need much further recapitulation, that the medical man generally is lacking in business habits. Indeed, he is frequently, at any rate so far as his pecuniary interests are concerned, somewhat of a child. He is not altogether an altruist nor so imbued with the milk of human kindness that he likes to work for nothing, although it may be said that his calling is calculated to render him more charitable than most men, but the duties of his profession consume so much of his time that in many instances he is physically incapable of looking after his material interests as closely as he should. Moreover, patients have a curious and baffling habit of disappearing from the ken of a medical man and of leaving no trace behind. It is said that of all the evasive classes dwellers in flats have the reputation of being especially addicted to suddenly disappearing. The medical man is greatly handicapped in that he has not the means at his disposal which are open to some other professions and trades of avoiding the contraction of bad debts, or when these are contracted of enforcing payment.

A person who is unwilling to pay his debts cannot avoid doing so, at any rate not without a considerable amount of difficulty, even with solicitors, who are comparable to medical men in so far that professional etiquette prevents them from demanding cash for services rendered. In most cases a solicitor will be in possession of documents on which he will retain a hold until his claims are satisfied, while he will frequently have private information as to the pecuniary status of his client which will make it easy for him to have successful recourse to the law. The medical man has no such means of protection, and it is hard to say why, if it be possible to accomplish this by legitimate and honourable methods, he should not take steps to render himself to some extent secure against the devious wiles of a certain section of the public. It appears that the publication of a black list would be a legitimate and honourable mode of attaining this object; in fact, it would be no more than an ordinary business-like precaution against fraud.

No doubt it will be asserted by many members of the profession that the adoption of a method of this nature would tend to lower the dignity of the medical fraternity as a whole and that it would be preferable to lose money than to descend to trade methods for the collection of debts. On the other hand, probably the majority of medical men would perceive in the pursuance of this system nothing in any way derogatory, but only a perfectly above-board defensive plan of campaign. Of course, it goes without saying that discretion would have to be exercised in regard to the compilation of a black list. Before names were placed on the list they would be carefully considered and only those who by their practices had rendered themselves objects of suspicion would be blacklisted. Habitual defaulters and persons who can obviously find money to meet all their wants should alone have their names upon a black list. In short, taking into consideration the manner in which the medical man is so frequently mulcted of his dues by dishonest persons, he is perfectly justified in protecting himself by any method which will attain this object and which will not hurtfully prejudice the dignity of the profession. So far as can be judged from the somewhat limited trial of the method in the United States it would seem that a black list, discreetly drawn up, should aid in safeguarding to a considerable extent the interests of the general practitioner.—I am, Sirs, yours faithfully,

Nov. 1st, 1906. VIGILANT.

BIRMINGHAM.

(FROM OUR OWN CORRESPONDENT.)

The University and Economic Zoology.

BIRMINGHAM lies in the centre of a great agricultural and horticultural district in which up to the present there has been no organised scheme for supplying scientific advice regarding injurious insects and other pests to those who suffer from their depredations. That such advice is needed, appreciated, and extremely useful has been proved conclusively by the experiences of India and America. Recognising the need, and with the desire to do the utmost it can for the seven midland counties, the Council of the University has established a department of economic zoology. The *raison d'être* of such a department is the now fairly well-known fact that most, and probably all, the pests which trouble farmers, market gardeners, fruit growers, and cattle breeders have their own special and deadly foes, which are therefore man's friends. The objects of the new department are to carry out experimental researches on animal and insect pests and their enemies on lines somewhat similar to those which have produced such striking and beneficial results in various parts of America, and particularly in California where it may be said the orange-growing industry has been saved from complete disaster. In addition it is intended that the department shall furnish free of charge information regarding insects and animals which may be looked upon as friends or enemies to those resident in the seven midland counties and whose interests are concerned. The department will also undertake, free of charge, to inspect orchards and crops which are attacked and to report upon the remedies to be applied. The reports and circulars which the department publishes will be forwarded free to agriculturists and horticulturists in the seven counties who apply for them. Special courses of instruction will be provided as occasion arises and arrangements have already been made to deliver lectures before a number of societies interested in the subject with which the new department deals. As no room was available in the University buildings for the accommodation of the new sub-section of the zoological department the council has acquired premises in Newhall-street in which it has fitted up a laboratory and a museum which have been placed in charge of Mr. W. E. Collinge whose work in connexion with insect pests is widely known and has already proved of value. The scope of the new department is large, but at present its means and facilities are small and if it is to develop to its full extent more money will have to be provided than is at present available both for purposes of equipment and staff. The object of the department should appeal strongly to the county councils of the midland district and if they are wise they will hasten to provide the means whereby the department may extend its scope of investigation and teaching and thus enable it to become a valuable source of material benefit to the whole of the seven counties.

The Guild of Undergraduates.

The Guild of Undergraduates has been established for the purpose of advancing the educational interests and broadening the social interests of the undergraduates of the University and thus it has taken upon itself the duties of the old Students' Union, which did much for the interests of the undergraduates in earlier days. On Friday evening last the guild held its first reception in the University buildings in Edmund-street and the guests were received by Lady Lodge and by Mr. G. Shaw Scott, the president of the guild. Most of the laboratories were thrown open and demonstrations and experiments were displayed in them. In the chemical theatre Dr. Denning lectured on liquid air and the medical theatre was utilised for a concert and a short dramatic performance which were greatly appreciated and in which Miss Ethel Weldren, Miss Turner, Dr. Findlay, Mr. Wesley Burman, Mr. B. A. Lloyd, and Mr. Robbins took part.

Nov. 13th.

SCOTLAND.

(FROM OUR OWN CORRESPONDENTS.)

Royal Infirmary, Edinburgh: Retirement of Dr. W. Allan Jamieson.

AT the meeting of the board of management on Nov. 5th the managers approved a minute regarding the retirement of Dr. Allan Jamieson from the dermatological department on the completion of his term of service, in the course of which they say that the managers recognise that they are losing a highly valued member of the staff. At the time of its inception the managers committed the charge of this department to Dr. Jamieson, and to him is owing in large measure its development into the important position which it now occupies as one of the beneficent agencies of the Royal Infirmary. The managers express to Dr. Jamieson their grateful thanks, and in token of their esteem and in acknowledgment of his services they have appointed him consulting physician to the skin department of the Royal Infirmary.

Election of Direct Representative to the General Medical Council.

The contest for the office of Direct Representative for Scotland on the General Medical Council has begun. Dr. W. Bruce has addressed the profession in Aberdeen and is to address them in other centres. Dr. Norman Walker has opened his candidature by a meeting in Edinburgh and he also has arranged to address the electors in other places. These are the only candidates at present in the field.

Proposed Medical Officer for Edinburgh School Board.

The school management committee of the Edinburgh School Board has agreed to recommend to the board the appointment of a medical officer whose whole time should be at the disposal of the board. This is a very important proposal and it is to be hoped that the board may see its way to give effect to it. The medical influence of the Local Government Board is on the side of such a scheme, as it is realised that if any real benefit is to result from the medical examination of school children the work will have to be under the direction of someone specially interested in the work and who can devote his whole time and energies to it.

University of Glasgow Graduation.

The autumn graduation ceremony in connexion with the University of Glasgow took place last week in the Bute Hall. In the unavoidable absence of the Very Rev. Principal Story the ceremony was presided over by Professor Stewart and there was a large attendance of the professoriate. The degree of M.D. was conferred upon 15 graduates, of whom two received the degree "with honours" and two "with commendation." Afterwards 12 students who had not finished in time for the summer graduation received the degrees of M.B. and Ch.B. Four ladies graduated M.D. (one "with honours") and three graduated M.B., Ch.B.

Falkirk Infirmary.

Considerable extensions have recently been made to the accommodation of Falkirk Infirmary and last week the formal opening ceremony took place. The extension, the exterior of which is in keeping with the other parts of the institution as regards the style of architecture, consists of a wing for the accommodation of the nursing staff, a new ward containing eight beds, a new operating theatre with all the latest appliances, and new washhouses and laundry. The cost of the additions has been £3500, which has been defrayed by public subscriptions and contributions from the employees of public works in the district.

Nov. 12th.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

The Public Health of Dublin.

IT has long been thought that the notoriously high death-rate in Dublin was largely due to the mortality among infants and children. Sir Charles A. Cameron has recently written a letter which was published in all the morning papers controverting this, and stating that he had compared the infantile death-rate here with other cities in England, from which it appears that Dublin in that regard holds really a good position, although the infantile death-rate is very high. Professor Antony Roche has replied in a long letter, in which he states that Sir Charles Cameron's comparison of the infantile death-rate here with that of large manufacturing cities in England is not to be accepted for it leads to an erroneous conclusion. He omits to mention, however, that the chief medical officer of health in Dublin has many times referred to the fact that the inspection of milk in this city is confined to the city dairies, while much the larger proportion of milk consumed here comes from country districts where the dairies are not under the supervision of the corporation or of its chief medical officer of health. The country dairies can send in anything they wish under the name of milk unless they add too much water to it, in which case they are fined a small sum which does not interfere seriously with their large profits. The state of things seems bad here, but in Belfast it is probably worse, for it has been recently reported in THE LANCET that neither the city nor country dairies are officially inspected.

Appointment to Dispensaries.

At a meeting of guardians of the North Dublin union in reference to the resignation of Dr. William J. Gibson, the Local Government Board sent a letter requesting the guardians to rearrange the sub-districts of the union in order to provide that each medical officer should have a sub-district under his charge which should be either wholly urban or wholly rural.

Government Medical Appointment.

The Lord Lieutenant has appointed Mr. John Fagan, F.R.C.S. Irel., to be a member of the General Prisons Board for Ireland in room of Dr. Stewart Woodhouse, resigned.

Royal Victoria Hospital, Belfast.

On Nov. 7th at a meeting of the board of management of the Royal Victoria Hospital the following were elected house surgeons: D. R. Taylor, M.B., S. J. Kellen, M.B., and H. C. Watson, M.B.

The Public Health Committee of Belfast.

At the monthly meeting of the Belfast corporation held on Nov. 1st a medical alderman asked why the report of an inspection of the Bank Buildings living-in system had been suppressed, to which the chairman of the public health committee replied that the inspectors had been refused admission to that establishment when they called. At the next meeting of the public health committee the inspectors were actually instructed to obtain a magistrate's order if necessary. At a meeting of the public health committee held on Nov. 8th it is stated in the papers that "Mr. Ward, the assistant executive sanitary officer, reported that an official visit had been paid to the living and sleeping apartments of the Bank Buildings, and had found everything in a most satisfactory condition." It appears, however, that the real facts are as follows. When the inspectors called at first they were received very courteously and informed that they were at liberty to inspect the whole establishment, but they must accept full responsibility for such an intrusion into a well-known private concern. In these circumstances the inspectors withdrew. They afterwards by mutual arrangement inspected the premises and made the very favourable report referred to previously. The question that everyone is asking is, What led to the inspection of one of the greatest drapery establishments in Belfast which pays nearly £2000 per annum in taxes?

Rainfall in October.

In October in the North of Ireland 4·79 inches of rain fell on 28 days, making a total of 33·23 inches so far for the year, the average for the previous 31 years being 33·16 inches.

The Annual Dinner of the Cork Medical and Surgical Society.

The annual dinner of the Cork Medical and Surgical Society took place at the Imperial Hotel, Cork, on Nov. 10th. The President, Professor C. Y. Pearson, was in the chair, and the vice chair was occupied by Dr. J. Reid of Bandon. There were about 40 members and guests present. After the toast of "The King" had been duly honoured, the President proposed the toast of "The Cork Medical School," coupling with it the names of Professor H. Corby and Dr. J. Cotter. In replying both speakers referred to the successes of Cork students as illustrated by recent achievements. Colonel McNeece, R.A.M.C., replied to the toast of "The Navy and the Army," and in the course of his speech pointed out that the Director-General and the two assistant directors of the Royal Army Medical Corps are Irishmen. Colonel J. Crofts, I.M.S. (retired), also replied in a humorous speech. The evening was made particularly enjoyable by the excellent singing of one of the guests, the Rev. Dr. Collison.

Nov. 13th.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Miliary Fever and Field Rodents.

AT a meeting of the Academy of Medicine held on Oct. 23rd M. Chantemesse gave an account of an inquiry which he had undertaken in company with M. Marchoux and M. Havry into an epidemic of miliary fever which existed during May and June throughout the two Charentes. In six weeks 6000 persons were attacked. The epidemic specially affected the villages while the large towns escaped almost

entirely. Examinations of the blood and cerebro-spinal fluid of the patients yielded no results in the shape of any germ either inoculable or cultivable. The epidemic was obviously limited to the country districts and it never crossed the Charente except where there was a bridge. The character of the disease was much more epidemic than contagious. Women were affected more than men, and especially dwellers on ground-floor rooms which were not boarded. In any village attacked the houses in the outskirts suffered before those in the middle of the village. Looking at these facts M. Chantemesse inquired whether the blame should not be laid upon field rats and voles (*campagnols*) and their fleas as carriers of infection. This idea is only a hypothesis but it merits careful attention, for the district attacked by the fever is exactly that which was devastated some two years ago by voles. On the other hand, all the patients examined by M. Chantemesse showed numerous flea-bites. In this way the transmission of the disease from the rodents can be explained.

Typhoid Fever Contracted in a Hospital.

At a meeting of the Hospitals Medical Society held on Oct. 26th M. Gandy gave an account of six cases of typhoid fever all of which occurred within the space of three weeks after the admission of one case of the same disease to a woman's ward in the Lariboisière Hospital. Five of these occurred in patients who had been in the hospital for varying periods of time and one in a nurse who was in charge of some typhoid fever cases. The three earlier cases, two patients and the nurse, commenced simultaneously 11 days after the admission of the original case to the ward and the three others developed some days later. The evidence pointed strongly to direct contagion from the original case admitted, for no case of typhoid fever broke out in any other ward, and it is is probable that the hands of the nurses carried the infection. The cases bring up again the question whether typhoid fever cases in a general hospital should not be treated in a separate ward.

The Treatment of Cancer.

M. Poirier read an important paper on this subject before the Academy of Medicine on Oct. 30th. It was by no means encouraging. M. Poirier began by saying that at the present time we were in absolute ignorance of the origin of cancer or of its nature. Nevertheless, he pleaded that workers in the field of cancer research should combine their efforts instead of each working for his own hand, and he suggested the installation of a Central Cancer Institute where the results already arrived at could be registered, examined, and collated. He drew attention to the failure of the various serums which had been brought forward as a remedy, despite the fact that under their use some transitory and fallacious improvements had occurred; to the failure of the x rays under which only very superficial cases of true cancer had improved or those in which the diagnosis was uncertain, while a large number of cases had been distinctly rendered worse by them. He allowed, however, that radiotherapy had by no means said its last word. The only treatment which up to the present had resulted if not in a cure at least in a prolongation of life was surgical treatment applied early and in a radical fashion. Unfortunately, however, the surgeon but rarely had the opportunity of operating at an early stage of the disease. M. Poirier limited his observations upon operative procedure to cases of cancer of the tongue. After a careful study of the distribution of the lymphatics of the neck he had devised a method of operation by which he thought that he could cut so wide of the disease as to include all its ramifications and, moreover, intercept any extensions into apparently sound tissues. Despite this, out of 32 cases eight had died at once or almost at once, five had suffered recurrence, two of them very rapidly, while of the remaining patients who had survived he had no good grounds for saying that their cure was complete. Cancer of the tongue could, however, be both foreseen and guarded against by the sufferer. In 27 cases out of 35 which had come under M. Poirier's notice the patients were both smokers and syphilitic. A person who could be ranked in both these classes should not have the least hesitation on the first appearance of any buccal lesion of having a microscopic examination made without wasting any time in temporising with mercurial treatment. Further, on the report being unfavourable, the growth should be at once excised. On the conclusion of M. Poirier's paper Dr. Henri de Rothschild sent him a cheque for 100,000 francs as a first contribution to the creation of a cancer institute. Other cheques have come in and a committee for the consideration of preliminaries is in rapid course of formation.

Slow-growing New Growths and the X Rays.

At a recent meeting of the Hospitals Medical Society M. Béclère showed a woman who in 1892 had undergone amputation of both breasts for a new growth. In the year 1900 a recurrence of the growth occurred in the scar of one breast and in 1903 multiple nodules appeared in the scalp, the axillary and clavicular regions, and the inguinal region. Many of the nodules in the scalp disappeared on being treated by the x rays. M. Ménétrier added that histological examination of a fragment of the recurring growth removed from the patient during life enabled him to state that the growth showed a much greater relationship to the type of adenoma than to that of epithelioma.

Novocaine in Surgery.

Dr. R. Blondel has been for the last eight months using novocaine in all operations which do not necessitate general anæsthesia. During this time he has used it in the following cases—viz., ten of curetting, three of operations on the vagina and perineum, four operations on the bladder, and four small operations of general surgery. What is most striking with regard to this anæsthetic is the total absence of generalised disagreeable symptoms and the remarkable duration of the anæsthesia. Even after 25 minutes sutures can be inserted without the perforation of the skin being in any way felt to be painful. Operations on the perineum showed that this region always retains a certain amount of sensibility. All the cases of curetting were in patients suffering from hæmorrhagic metritis—that is to say, cases in which the mucous membrane was abraded, and so unusual facility for the absorption of the anæsthetic was present. Dr. Blondel's method of proceeding was to pack the uterus for ten minutes before operating with a gauze wick soaked in a 5 per cent. solution of novocaine. The amount of sensibility which the uterus retained on curetting was much the same as that which occurs with cocaine—that is to say, it was not absolutely abolished. Deep strokes of the curette were perceived by the patient as is the case with cocaine or stovaine, but this must be the case because the uterine muscle possesses a special sensibility to pressure and this sensibility can only be abolished by a general anæsthetic. In cases of the removal of two cysts of the scalp and of a synovial cyst in the joint of the great toe the operation was finished, the sutures were inserted, and the edges of the wound were adjusted without the patient feeling any pain. There was remarkably little hæmorrhage during the operations. In these cases Dr. Blondel made use of a 2 per cent. solution in doses of from one to two cubic centimetres given hypodermically in the line of the incision which he intended to make.

Nov. 13th.

BERLIN.

(FROM OUR OWN CORRESPONDENT.)

The Berlin Medical Society.

IN the Berlin Medical Society, at the first meeting of its present session, Professor Senator read a paper on Erythrocytosis, a morbid condition characterised by a dark-red colour of the skin, swelling of the spleen, and an increase of the red corpuscles in the blood. In the two cases observed by him a blood count showed that the erythrocytes were from 6,000,000 to 10,000,000 per cubic millimetre. The colour of the blood was normal as was the form of the red corpuscles; the leucocytes had not increased, the lymphocytes were reduced in number, and mast cells and the neutrophile and eosinophile leucocytes had increased. The specific gravity and concentration of the blood were normal. In respiration the consumption of oxygen, the excretion of carbonic acid, and the respiratory volume were all three increased in both patients. In one case cardiac hypertrophy and albuminuria were present. The cause of the condition was either that fewer erythrocytes perished or that more of them were formed. The latter hypothesis seemed to be more likely, as an increased amount of bone marrow and enlargement of the spleen had been

observed in polycythæmia. As regards treatment, Professor Senator considered that venesection might be tried, as hæmorrhages had sometimes happened in the course of the disease. The administration of oxygen had proved to be useless. Professor Senator's paper was followed by an animated discussion. At the same meeting Professor Meyer showed a case of rhinoscleroma which included the nose, the upper lip, and the hard and soft palate. The patient recovered under radiotherapy, the nose and lip being exposed to the x rays 132 times for a total period of 1619 minutes and the palate 73 times for a total period of 412 minutes. The patient now presented only a large cicatrix of the affected parts. Professor Meyer also showed photographs of the patient's appearance previously to the treatment by means of a lantern slide in natural colours prepared by Professor Miethe's method.

The Government Medical Department.

At a recent meeting of the Berlin Medical Chamber, which is a duly constituted public body consisting of representatives chosen by the profession of Berlin and the province of Brandenburg, Dr. Pistor introduced a motion on the subject of the Prussian Government Medical Department. Dr. Pistor, who is himself a retired member of the department, drew attention to the fact that the head of the department, which included medical and legal members, had always been a lawyer and never a medical man. He agreed that lawyers could not be dispensed with in the department because of its manifold administrative business, but he considered it to be an anomaly that the head of the department should not belong to the medical profession and all the more because he was by virtue of his office also president of the so-called Wissenschaftliche Deputation, a purely medical body which acts as the highest consultative board for the Prussian Government, and is composed of 12 members, professors of the Berlin Medical Faculty and Government medical officers. This body has to decide scientific questions exclusively, and general hilarity was caused in the Chamber when Dr. Pistor said that according to the rules the lawyer-president had a casting vote in the event of the number of the votes being equal. Other Government departments, such as the railway department, in which the same anomaly formerly existed, were now presided over by men belonging to the respective professions, but the medical department had been left in the hands of outsiders. The Chamber passed a resolution to the effect that the other provincial chambers should be invited to send a joint petition to the Crown praying that a medical man should be appointed as head of the Government Medical Department.

Malpractices in a Hospital.

Grave charges against the Hamburg State Hospital at Eppendorf were recently made in a public meeting. It was said that bodies of deceased patients who had relatives and friends were sold to the anatomical institutes of various German universities and that in several instances a body had been removed from the coffin and its place supplied by stones, ashes, and portions of other bodies which were subsequently interred with the usual solemnities. Post-mortem examinations were said often to be performed without the consent of the patient's relatives. The author of these charges before making them public had called on the chairman of the hospital committee to inform him of these unseemly practices but was told that on careful inquiry his charges had been declared to be unfounded. After the above-mentioned meeting the hospital board prosecuted him for slander, but he obtained a verdict in his favour as all his statements proved to be correct. It was ascertained that the chief porter of the anatomical department of the hospital had started a flourishing trade in bodies, skulls, and skeletons throughout Germany without the knowledge of the hospital authorities. The matter was lately discussed in the Hamburg State Parliament where Dr. Braband asked the Senate whether they had taken measures to prevent any repetition of such irregularities. Dr. Roph, speaking in the name of the Senate, said that at the Hamburg Hospital, which is perhaps the largest in the world, about 3000 deaths occur every year, and that notwithstanding the careful supervision which is exercised irregularities may happen when among the great number of hospital officials one or two are not trustworthy. He promised that new regulations should be issued to prevent necropsies being made without the consent of the families of the deceased and that, of course, the illegal sale of bodies would be totally stopped. Such occurrences are, of course, very regrettable. Among the lower classes in Germany some prejudices against hospitals still prevail and they will naturally be strengthened by the present disclosures.

Stomatitis Conveyed by a Telephone Mouthpiece.

Dr. Bundt of Auerfurt has recently published a case of stomatitis in which direct infection by the telephone apparatus was obvious. He attended a farmer, who a fortnight ago suffered from ulcerative stomatitis in a rather severe form. The patient's state, which had begun to improve, suddenly became rather grave after he had a tooth extracted by a dentist without the medical attendant's knowledge. The wound in the mouth became infected, the glands became swollen, and hectic fever developed. Three weeks after his first visit to his patient Dr. Bundt was consulted by an inspector of telephones who showed the same symptoms of ulcerative stomatitis, though in a less malignant degree. It was stated that because of the first patient's telephonic apparatus being out of order the inspector had several times been there to make repairs. The communication being bad the patient had been obliged to shout into the apparatus to call the office, and thus germs had obviously been spread over the mouthpiece. The post office authorities on being informed of the circumstances provided its telephone inspectors with cotton-wool and disinfectants for the purpose of cleansing the mouthpiece in cases where an infectious disease has occurred in the house of the subscriber to the telephone.

Nov. 12th.

ITALY.

(FROM OUR OWN CORRESPONDENT.)

The Nobel Prize.

THE event of the week in Italian professional circles is the award of the Nobel prize. It has been divided between two conspicuous workers in the field of scientific medicine, both of them belonging to the "Latin Civilisation"—Professor Camillo Golgi, of the great Lombard school of Pavia, and Professor Ramon y Cajal, whom the University of Madrid is proud to call her own. Professor Golgi is a striking example of the success with which the genius of inductive research, seconded by ardent love of truth and indomitable perseverance, can surmount obstacles and disadvantages material and local. The son of a country practitioner who held the post of divisional surgeon (*medico condotto*) at Bresciano in the Alta Italia, young Golgi began his life work also as a general practitioner at Abbiategrasso, near Milan, and there in a modest laboratory of his own creation he entered on those studies of the minuter structure of the nervous system with which his name is so widely and so honourably identified. It was there that he conceived and perfected his method "dell' Impregnazione Neva o Cromo-Argentea," now adopted and practised in laboratories of histology, European and American. On the strength of this and the contributions he made to the scientific bases of medicine through its means he was called from his post of "medico condotto" to the Chair of Pathology in the University of Siena, whence in quick succession he passed to those of Turin and Pavia, the latter of which he has held with such acceptance not only at home but abroad that he has been honoured with degrees in many continental schools, and quite lately in that of Aberdeen (at its quatercentenary) following close on a similar honour from the University of Cambridge. As a prize-winner he has been the most successful of Italians—gaining the Premio Riberi (20,000 lire or £800) given by the Accademia Medica of Turin; the Premio Fossati of the Istituto Lombardo; the Rineckei prize of Würzburg; the Thompson prize of Boston, U.S., and others. "*Nihil tetigit quod non in aurum converterit*," said Professor Grocco of the Florentine School, in obvious imitation of Dr. Johnson's epitaph on Goldsmith! As to the Spanish histologist with whom he divides the Nobel prize, I may recall some of the notes in which THE LANCET introduced him to its readers on occasion of the International Medical Congress held at Madrid. Born 56 years ago at Petilla in the province of Navarra, he graduated with distinguished honours at Saragossa and thereafter dedicated his time and his talents to histological research—a subject all but ignored at the time in Spain. In 1884 he was appointed professor of general anatomy in the University of Valentia and shortly thereafter was transferred to the corresponding chair in Barcelona. He first gave his discoveries to the light in 1889 and acquired

abroad the reputation but tardily accorded to him in his own country. In March, 1894, he was chosen lecturer for the year by the Royal Society of London, while the University of Cambridge granted him the honorary degree which it had shortly before conferred on Pasteur. By this time Spain was fully alive to the achievements of her son and, in confirmation of the honours bestowed on him by Great Britain, Germany, and France, welcomed him as the creator of her histological school and awarded him a series of special distinctions at Madrid. Since then he has worked steadily in the field he had early made his own—with what success let his manuals and the 200 contributions (in notes and monographs) with which he has enriched the biological and medical journals of his native country bear witness.

Rainfall and Flood.

In spite of another added to the many roads to Italy and Rome—that of the Simplon railway which shortens the journey between London and Milan by 80 miles—the arrivals of tourists register no corresponding increase. For one thing the luggage robberies on that line have been numerous enough to act as a deterrent, and Jupiter Pluvius has done his best to reinforce his light-fingered courier Mercury in warning off the "human import." All the great rivers—the Po, the Arno, and the Tiber—and all their affluents, major and minor, have combined to overflow their banks, to inundate the surrounding country, and to convert many a town into what Hood called "a sort of vulgar Venice." Add to this the state, truly chaotic, of the railway service, and a picture may easily be conjured up of Italy, like "Mariana in the Moated Grange," looking wistfully across her frontiers and wringing her unoccupied hands to the refrain of "He cometh not." In truth, the railway question—coextensive as it is with Italy's communication with that outer world which brings to her one-third of her annual revenue—is the question of questions for her legislature, and forms the chief topic of discussion at the periodical meetings of her Association for Promoting the Influx of Foreigners—an association with unlimited "power to add to its number" from all classes of the community. She is now realising the justice of Garibaldi's admonition, "cut down your standing army and your floating navy and devote the money thus economised to the development and the completion of your railway system from frontier to interior." If ever a country could dispense with its "bloated armaments," the General used to say, it is Italy—Italy, whose real defence is her treasures, archæological, artistic; treasures which all the civilised world is only too eager to enjoy, and therefore to protect against the despoiling hand of any possible invaders. But those wise words have, since their utterance 25 years ago, been drowned by the manufacture of ironclads and weapons of precision from Venice to Castellamare, from Spezia to Terni, and Italy sees herself burdened with an "army she cannot mobilise and a navy she cannot coal"—to the partial exclusion of the only invader she has no cause to dread, the English-speaking travelling world.

Nov. 10th.

NEW YORK.

(FROM OUR OWN CORRESPONDENT.)

Bacteria in Grocery Milk in New York.

As in London, so in New York, milk is very frequently retailed, and especially in the quarters of those cities in which the poor dwell, in grocery shops. In New York the Board of Health inspects all stores where milk is sold, but with all the care its members are able to exercise milk in the east side of New York is often greatly contaminated. Of course, this is especially the case in the hot weather, as many of the smaller groceries have no facilities for keeping milk cool, and it was reported in 1905 by the New York Board of Health that in one district of the lower east side "out of a total of 2458 stores visited only 450 were found where the milk was properly cooled and where there was no communication with living rooms." The consumers of milk kept for sale in grocery shops of the lower east side of New York, and to a great extent the same statement will apply to the East-end of London, are mostly infants and invalids of the poorer class. The conditions in which milk is kept in such places are in a high degree insanitary, and the cans and utensils are unclean and exposed to air and dust. Dr. U. Kruskal of New York a short time ago made a fairly thorough investigation of the conditions prevailing in the lower districts of New York, so far as the sale of milk was concerned, and, in addition, obtained samples of milk which he carefully analysed. He has published the results of these investigations recently. In samples of milk from one street obtained at 9 A.M. he found that the average number of bacteria in 1 cubic centimetre was 34,735,000. In samples obtained in the same street at 2 P.M. he found that the average number of bacteria in 1 cubic centimetre was 61,227,000. In samples obtained in the same street at 7 P.M. he found that the average number of bacteria in 1 cubic centimetre was 93,258,000. In another street, which is notoriously the dirtiest and dustiest street in New York, and which, bad as the conditions in certain parts of the London East-end are, cannot be equalled for dirt, noise, and general insanitary surroundings in the whole of our metropolis, Dr. Kruskal found that the milk sold in shops was in a disgracefully filthy state. Milk obtained in this street at 9 A.M. contained no less than an average of 41,250,000 bacteria in 1 cubic centimetre; milk obtained at 2 P.M. contained an average of 69,450,000 bacteria in 1 cubic centimetre; while milk obtained at 7 P.M. contained an average of 133,223,000 bacteria in 1 cubic centimetre. It may be mentioned that in each case 13 samples taken on different days were examined. Park and Bebb, who examined the market milk of New York in different places and under different conditions some few years ago, found that shop milk sold in the poorer districts in midwinter contained an average of 1,977,692 bacteria per cubic centimetre, and in September 13,163,600; and that the milk of dairy shops in the fashionable part of the city contained in midwinter 327,500, and in September 1,061,400. According to Pakes[1] London milk in 1899 contained from 3,000,000 to 4,000,000 bacteria per cubic centimetre, while Uhl,[2] who examined the market milk in Giessen in May, found from 83 to 100 up to 169·6 millions, and in June the average was only 2·9 millions per cubic centimetre. The fact should be taken into consideration that milk delivered in New York is usually 48 hours old before it reaches the consumer, but, on the other hand, in America there is an abundant use of ice. The milk is quickly cooled by ice and kept in refrigerating cans at a temperature not much above freezing point until the time is due for its distribution. As is well known, ice is not used in connexion with milk in England during its transportation. None of the American milk bacteria are pathological but, as Dr. Kruskal points out, it is also true that some of them may, under conditions of excessive multiplication, produce poisonous toxins which are directly injurious to the weak stomach of the infant or the invalid. Dr. V. C. Vaughan, a well-known authority in the United States, is of the opinion that nearly all cases of summer diarrhœa among infants are due to the presence of putrefactive or other decomposing bacteria in the milk food. The conditions in which milk is frequently kept in all large cities are, to say the least, susceptible of great improvement.

Obituary.

CHARLES WILLIAM BROWNE, M.R.C.S. ENG., L.S.A.,

DISTRICT SURGEON AND JUSTICE OF THE PEACE, TAUNGS, BRITISH BECHUANALAND.

THE death of Mr. C. W. Browne after a short illness of five days has come as a great shock to his many friends. He worked hard at his practice until he was overtaken on the evening of Sept. 16th by what might have been an illness of a septic nature. Under treatment the pain, from which he was suffering acutely, ceased; he then became unconscious when he had an attack of heart failure and the end came on the evening of the 21st. Mr. Browne was born on Nov. 6th, 1837, at Chudleigh, Devonshire, where his father, the late Dr. Bernard Browne, was then in medical practice. He was an only son and a descendant of the house of Montague on his father's side and of the Drakes of Ashe on his mother's side. He studied at Westminster Hospital and obtained the diploma of M.R.C.S. Eng. in 1858

[1] THE LANCET, Feb. 3rd, 1900, p. 312.

[2] Zeitschrift für Hygiene und Infectionskrankheiten, Band xii., 1892, p. 475.

and that of L.S.A. Lond. in 1859. He held the post of house surgeon at the Metropolitan Hospital and at St. Marylebone General Dispensary, London, and was also medical officer of Royal Kew Gardens. He went to South Africa in 1866 and became district surgeon in Natal, afterwards at Stockenstroom, Cape Colony, subsequently at Rouxville, late Orange Free State, and lastly, at Taungs, British Bechuanaland. He was also justice of the peace at the various places. He visited England and his birthplace in 1904 and leaves a widow and two daughters.

WILLIAM HORROCKS, M.R.C.S. ENG., L.S.A.

THE death occurred on Nov. 4th, at Turton, near Bolton, Lancashire, of Mr. William Horrocks after a short illness from bronchitis and hypostatic pneumonia. He was born in 1839 and commenced his medical career as assistant to a general practitioner. He served an apprenticeship and entered Guy's Hospital, London, in 1858. He commenced practice in his native village, Turton, in 1862, and retired only four years ago after 40 years of hard work in a sparsely populated district, consisting chiefly of poor people, by whom he was greatly beloved. He took an active part in educational and sanitary matters and in disposition he was kind and genial. He was particularly fond of, and kind to, all animals. He leaves a widow and three daughters.

Medical News.

EXAMINING BOARD IN ENGLAND BY THE ROYAL COLLEGES OF PHYSICIANS AND SURGEONS.—The following gentlemen having completed the Final Examination in Medicine, Surgery, and Midwifery of the Conjoint Board and having complied with the by-laws of both Colleges, the Licence of the Royal College of Physicians was conferred upon them on Oct. 25th last, and the diploma of Member of the Royal College of Surgeons on Nov. 8th, viz.:—

Eustace Henry Adams, Guy's Hospital; Edgar Alban, Guy's Hospital; Ewald Balthasar, St. Mary's Hospital; Arthur Lionel Baly, M.A. Cantab., Cambridge University and University College Hospital; George Beram Bartlett, B.A. Cantab., Cambridge University and London Hospital; Harold Garfield Bennett, St. Thomas's Hospital; Arthur William Berry, Guy's Hospital; Melville Birks, M.B., B.S., Adelaide University and London Hospital; Patrick Black, B.A. Cantab., Cambridge University and St. Bartholomew's Hospital; Harry Oliver Blanford, St. Thomas's Hospital; Leonard Howard Bowkett, London Hospital; John Errol Moritz Boyd, St. Mary's Hospital; George Guy Butler, B.A. Cantab., Cambridge University and St. Thomas's Hospital; William Elliott Carswell, M.B., Ch.B. New Zealand; Colin Cassidy, B.A. Cantab., Cambridge University and St. George's Hospital; John Basil Close, Leeds University; Arthur George Cole, St. Mary's Hospital; Horace Godden Cole, St. Thomas's Hospital; Isaac Reginald Cook, B.S. London, Guy's Hospital; James Couper, Charing Cross Hospital; Samuel Barrett Couper, B.A. Cantab., Cambridge University and London Hospital; Peter Paul Daser, M.D. Innsbruck University; Herbert Rees Davies, London Hospital; Gilbert Henry Dive, St. Bartholomew's Hospital; Francis Carminow Doble, King's College Hospital; Leslie Doudney, Guy's Hospital; Sheldon Francis Dudley, St. Thomas's Hospital; Arthur Gibson Dunn, M.B., B.S., Durham University; Leonard Edwards, London Hospital; Reginald Robert Elworthy, Westminster Hospital; Dennis Embleton, B.A. Cantab., Cambridge University and University College Hospital; Charles Horace John Fagan, B.A. Cantab., Cambridge University and St. George's Hospital; John Stewart Farnfield, L.D.S., Guy's Hospital; Charles Henry Fernie, St. Bartholomew's Hospital; Piero Fiaschi, M.D., Columbia University, New York; Robert Dow Forbes, M.D., McGill University, Montreal; *George Ford, M.B. Toronto, Toronto University and University College Hospital; William Gabe, Middlesex Hospital; Robert Francis Gerrard, Liverpool University; Carleton Wyndham Gittens, University College Hospital; Gilbert Egerton Green, Liverpool University; Sidney Wilfred Grimwade, St. Thomas's Hospital; John Robert Gunne, M.D., B.Ch., Manitoba University; Eric Henry Rhys Harries, London Hospital; Thomas Smith Harrison, Manchester University; Thomas Shirley Hele, B.A. Cantab., B.Sc. Lond., Cambridge University and St. Bartholomew's Hospital; Douglas Walter Hume, St. Bartholomew's Hospital; Reginald William Ironside, B.A. Cantab., Cambridge University and Westminster Hospital; Thomas Jones Jenkins, University College, Cardiff, and St. Mary's Hospital; Darwin Mills Keith, Michigan University and St. Bartholomew's Hospital; Thomas Lloyd Kenion, Liverpool and King's College Hospital; William Robert Kilgour, St. Bartholomew's Hospital; William Herbert King, University College Hospital; Camille Lebon, M.D. Strasburg, Strasburg University and London Hospital; William Herbert Lee, B.A. Oxford, Oxford University and London Hospital; Robert Bruce Low, University College Hospital; John Alexander McCollum, M.B. Toronto University; Owen Reginald McEwen, London Hospital; *Wilbert Ernest McLellan, M.B. Toronto, Toronto University and London Hospital; Peter Donald Fraser Magowan, Guy's Hospital; Eric Stewart Marshall, St. Bartholomew's Hospital; John Dodds Marshall, M.B., Ch.B. Victoria University, Manchester; Dinshaw Manekji Masina, Bombay and St. Bartholomew's Hospital; Edgar William Matthews, King's College Hospital; Herbert Bowen Maxwell, Cambridge University and London Hospital; Clifford Antony Leo Mayer, Guy's Hospital; Frederick Evelyn Woolner Meadows, Middlesex Hospital; Oscar Le Fevre Milburn, University College Hospital; Sydney Wood Milner, St. Bartholomew's Hospital; Howard Vincent Mitchell, Glasgow University and Guy's Hospital; William Steele Mitchell, St. Mary's Hospital; Edward Morgan, Guy's Hospital; Richard John Mould, B.A. Cantab., Cambridge University and St. Thomas's Hospital; Lionel Digby Neave, Oxford University and St. Bartholomew's Hospital; Frederic Miller Neild, St. Thomas's Hospital; Roger Brighouse Nicholson, Manchester University; Henry John Nightingale, St. Thomas's Hospital; Thomas Norman, Guy's Hospital; Henry William Ogle-Skan, St. Bartholomew's Hospital; Matthew William Baillie Oliver, B.A. Cantab., Cambridge University and St. Bartholomew's Hospital; George Garfield Packe, B.A. Cantab., Cambridge University and St. George's Hospital; George Singleton Parkinson, Bristol; Edward Henry Allen Pask, Sheffield University; George Downing Perry, Birmingham University and London Hospital; George Ramsay Phillips, Guy's Hospital; Arthur John Scott Pinchin, St. Thomas's Hospital; Alexander Morton Pollard, King's College Hospital; Edward Symes Prior, Bristol and Middlesex Hospital; Albert Edward Pryse, University College Hospital; Robert Montgomery Rendall, Guy's Hospital; Arthur Tunna Rivers, Guy's Hospital; Philip Meredith Roberts, M.B., B.S. Lond., University College Hospital; Richard Cadwaladr Roberts, B.Sc. Lond., London Hospital; Ivan Joseph Roche, Charing Cross Hospital; Thomas Reginald St. Johnston, L.S.A., Birmingham University and Westminster Hospital; Charles Newnham Slaney, St. Mary's Hospital; Herbert Austin Smith, B.A. Cantab., Cambridge and Liverpool Universities and Westminster Hospital; Frank Montagu Wilson South, Westminster Hospital; Herbert McLean Staley, Manchester University; Percy Kingsley Steele, M.B., Ch.B. Vict., Leeds University; Alfred Christopher Herman Suhr, B.A. Cantab., Cambridge University and St. Thomas's Hospital; Dalton William Tacey, M.A. Cantab., Cambridge University and London Hospital; Douglas Compton Taylor, University College Hospital; Oskar Teichmann, B.A. Cantab., Cambridge University and St. Bartholomew's Hospital; Horace Ernest Humphry Tracy, L.D.S., Guy's Hospital; Francis Cyril Trapnell, B.A. Cantab., Cambridge University and St. Bartholomew's Hospital; William Henry Trethowan, Guy's Hospital; Christopher Tylor, B.A. Cantab., Cambridge University and St. Bartholomew's Hospital; Ismael Valerio, Costa Rica and Guy's Hospital; John Philip Walker, M.P.S., Leeds University; Spencer Lewis Walker, B.A. Cantab., Cambridge University and St. Thomas's Hospital; Cuthbert Gerald Welch, University College and London Hospitals; Charles Ernest Whitehead, M.A. Cantab., Cambridge University and St. Thomas's Hospital; Richard Hugh Williams, Charing Cross Hospital and Manchester University; William Sugden Williamson, Leeds University; Henry Dewi Hampton Willis-Bund, St. Bartholomew's Hospital; James Graham Willmore, McGill University, Cairo, and Westminster Hospital; John Lawrence Wood, B.A. Cantab., Cambridge University and St. Thomas's Hospital; Edward Musgrave Woodman and Harold Nairne Wright, St. Bartholomew's Hospital; Arthur Batoum Zorab, Guy's Hospital; and Carl Ernst Zundel, London Hospital.

* M.R.C.S. granted on Oct. 11th.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—The Council of the Royal College of Surgeons has conferred licences in dental surgery upon the following two gentlemen who have completed the examinations and have now complied with the necessary requirements:—

Alfred Cookman Lockett, D.D.S. Pennsylvania, Pennsylvania Dental College; and Aubrey Geer Wootton, Charing Cross Hospital and Royal Dental Hospital.

UNIVERSITY OF OXFORD.—In a congregation held on Nov. 6th the degree of Doctor of Medicine was conferred on the following gentlemen:—

John Abernethy Willett, University College; and Tom George Longstaff, Christ Church.

—In a convocation held on Nov. 6th the degree of M.A. was conferred on William Somerville, Fellow of St. John's College, Sibthorpian Professor of Rural Economy, by decree of the House.—The dissertation submitted by Ernest George Hill, B.A., Magdalen College, Professor of Chemistry in Allahabad, for the degree of B.Sc. has been approved by the examiners and a certificate has been granted by the Board of the Faculty of Natural Science.—A scholarship in Natural Science is announced for competition at Keble College on March 12th, 1907.—The Linacre Professor of Comparative Anatomy has appointed G. H. Grosvenor, M.A., New College, and G. W. Smith, B.A., New College, to be his demonstrators upon terms submitted to the Vice-Chancellor and approved by him.—The following have been coöpted to membership of the Board of the Faculty of Medicine:—J. F. Payne, D.M., Magdalen College; G. J. Schorstein, D.M., Christ Church; and C. B. Wall, D.M., Queen's College.—The following nominations of examiners have been approved in congregation:—In elementary mechanics and physics: R. E. Baynes, M.A., student of Christ Church. In elementary chemistry: H. B. Hartley, M.A., Fellow of Balliol College. In elementary physiology: Francis Gotch, M.A., D.Sc., Fellow of Magdalen College. In elementary zoology: R. W. T.

Günther, M.A., Fellow of Magdalen College. In organic chemistry: N. V. Sidgwick, M.A., Fellow of Lincoln College. In materia medica: R. Stockman, M.D. Edin. In anatomy: A. Thomson, M.A., Exeter College. In physiology: H. M. Vernon, D.M., Fellow of Magdalen College. In pathology: G. S. Woodhead, M.D. Edin. In forensic medicine and public health: H. H. Littlejohn, M.D. Edin. In medicine: A. E. Garrod, D.M., Christ Church. In surgery: D'Arcy Power, B.M., Exeter College. In midwifery and gynæcology: J. S. Fairbairn, B.M., Magdalen College.

UNIVERSITY OF CAMBRIDGE.—The University has agreed to recognise the *Baccalauréat* of the French Universities and the *Reifeprüfung* of the Universities of Germany, Austria-Hungary, and Russia, as exempting under certain conditions from the Previous Examination.—Dr. Donald MacAlister was on Nov. 7th elected a member of the Council of the Senate.—At a Congregation on Nov. 8th the following degrees were conferred:—

M.B. and B.C.—S. G. Macdonald, St. John's; and R. M. Courtauld, Pembroke.

FOREIGN UNIVERSITY INTELLIGENCE.—*Vienna:* Dr. R. Grassberger has been appointed Extraordinary Professor of Hygiene; Dr. M. Oppenheim has been recognised as *privat-docent* of Dermatology and Syphilis.—*Warsaw:* Dr. Tschernjachowski and Dr. Gendre have been promoted to Ordinary Professorships of Surgery and Physiology respectively.

CENTRAL MIDWIVES BOARD.—A special meeting of the Central Midwives Board under the provisions of Rule 4 of the Rules of Procedure was held on Nov. 8th at Caxton House, Westminster, Dr. F. H. Champneys being in the chair. The following charges amongst others alleged against Cecily Dennett, certified midwife, were considered: "That being in attendance as a midwife at a confinement on June 5th, 1906, and following days she was guilty of negligence in the following respects: The placenta not having been expelled or expressed an hour after the birth she failed to advise that a registered medical practitioner be sent for. On the occurrence of hæmorrhage on June 6th she failed to advise that a registered medical practitioner be sent for. On the occurrence of a rigor, with a rise of temperature to 102° F., on June 8th she failed to advise that a registered medical practitioner be sent for." The Board decided that this midwife should be severely reprimanded. The following charges alleged against Mary Ann Green, certified midwife, were considered: "That having on March 19th, 1906, delivered a stillborn child, a registered medical practitioner not being in attendance, she neglected to notify the local supervising authority thereof as soon as possible after the occurrence. That on April 9th, 1906, she sent to the local supervising authority a false notification of the above stillbirth, stating that it had taken place on April 7th, whereas in fact it occurred on March 19th. That she kept the corpse in a cupboard in her house from March 19th until April 9th, thereby contravening Rule E 15." The Board decided that this midwife, who attended to answer the charges, should be severely reprimanded. The chairman in carrying out the decision warned the midwife as to her future conduct. The following charges alleged against Mary Jane Wilson, certified midwife, were heard: "That she did not use or possess the appliances or antiseptics required by Rule E 2, and that she persistently neglected to provide herself with them. That she did not keep a register of cases as required by Rule E 19." The Board decided that the midwife should be severely reprimanded. The charges alleged against Elizabeth Prior, certified midwife, and Fanny Simmonds, certified midwife, were heard: "That being in attendance as midwives at a confinement they were guilty of negligence." The Board directed that the names of these two midwives should be removed from the roll. The charge alleged against Betsy Simpkin, certified midwife, was heard: "That she had been convicted for making a certain false certificate that a child who had been born alive was stillborn." The Board directed that the name of this midwife should be removed from the roll. The charge alleged against Ann Taylor, certified midwife, that she had been convicted of manslaughter was heard. The Board directed that the name of this midwife should be removed from the roll. The charge alleged against Annie Twynam, certified midwife, that she had been sentenced to three years' penal servitude for larceny was heard. The Board directed that the name of this midwife should be removed from the roll. The following charges alleged against Phœbe Ann Weaver, certified midwife, were heard: "That she had been convicted of altering a certificate of death and that she had been convicted on two several charges of forging and uttering burial receipts." The Board directed that the name of this midwife should be removed from the roll. Charges of disobedience in regard to the rules of the Board alleged against Esther Skeels, certified midwife, and Matilda Tee, certified midwife, were heard. The Board decided that the names of these midwives should be removed from the roll.

THE SOCIETY OF ARTS.—The ordinary meetings of the Society of Arts will be resumed on Nov. 21st, when Sir Stuart Colvin Bayley, K.C.S.I., chairman of the council, will deliver an address. The ordinary meetings are held on Wednesday evenings, commencing at 8 P.M., and the subjects announced for the ensuing four weeks are: Patent Law Reform (by Mr. John W. Gordon), the Metric System (by Colonel Sir C. M. Watson), Fruit Growing and the Protection of Birds (by Mr. Cecil H. Hooper), and Flour Milling (by Mr. Albert E. Humphries). On Jan. 2nd and 9th the Wednesday evenings will be devoted to juvenile lectures commencing at 5 P.M. Five Cantor lectures on Artificial Fertilisers will be delivered on Monday evenings at 8 P.M. by Mr. A. D. Hall, commencing on Nov. 19th.

CONTINENTAL ANGLO-AMERICAN MEDICAL SOCIETY.—The annual meeting of this society was held in Paris on Oct. 30th at the residence of the honorary secretary, Dr. Leonard N. Robinson, the chair being taken by Dr. Alan Herbert. Dr. Stanley M. Rendall and Dr. D. W. Samways (of Mentone) and Dr. A. R. Coldstream (of Florence) were elected members of the executive committee. Dr. Hugh Treves-Barber (of Geneva) and Dr. A. W. W. Dowding (of Algeciras) were elected members of the society. In the evening the annual dinner of the society was held at the Hôtel du Palais d'Orsay, the chair being taken by Dr. J. Lucas-Championnière, professor of clinical surgery at the Hôtel Dieu. The following members were present: Dr. Mawlock, Dr. Hogg, Dr. Bull, Dr. Gros, Dr. Jarvis, Dr. Koenig, Dr. Robinson, Dr. J. R. Suzor, Dr. A. A. Warden (of Paris), Dr. Danvers (formerly of Bordighera), and Dr. Sillery Vale (of Arcachon). The guests included Dr. O'Brennan (of Kansas City), Dr. Albert Abrams (San Francisco), Dr. Drew, Dr. Chapman (Hertford British Hospital), Dr. Triboulet, Dr. Proust, Dr. Lutand, Dr. Lutand fils, Dr. Bottentuit, and Dr. Kraus. The Chairman, after proposing the usual loyal toasts of "H.M. the King of England," "The President of the United States," and "The President of the French Republic," proposed "Success to the Society" and said that, in spite of coming without the permission of his medical adviser, it gave him great pleasure to find himself again among English-speaking medical men, as he had always felt at home among them ever since the days long ago when he had worked in Glasgow with Lister. Dr. Danvers replied for the society. Dr. Bull proposed "Our Guests." Dr. O'Brennan replied for the American guests and with the spirit of prophecy foretold that a great future awaited medicine and surgery and that more especially from the United States would light come. Dr. Triboulet replied for the French guests, saying that he was perhaps called on to speak as he had the advantage of having visited both Great Britain and America. Dr. Warden proposed "The Health of the Chairman," who, he said, had ever been a fighter—first, as a pioneer when after working in Glasgow with Lister he was the first to introduce antiseptics into France, and now after many years carrying on a rearguard action in favour of antiseptics against the younger school of surgeons who were all for aseptic surgery, there still remaining without any doubt a place for antiseptic surgery. A brief reply from Professor Lucas-Championnière brought the proceedings to a close. It had originally been intended to make the annual dinner of the society an occasion on which to make a presentation to Dr. Alan Herbert to celebrate his promotion to the rank of Officier de la Légion d'Honneur and as a slight return for the many services which he has rendered not only to the society but to the profession generally. Owing, however, to a recent family bereavement Dr. Herbert asked that the presentation should be postponed for two or three months. Dr. Bull, 4, Rue de la Paix, Paris, who is acting as treasurer for this special object, will be pleased to receive any further subscriptions.

His Majesty the King has sent his annual subscription of £100 to the funds of the Middlesex Hospital.

MEDICAL BARRISTERS.—Two medical men are being called to the Bar this Michaelmas term: Mr. W. J. Von Winckler, M.R.C.S. Eng., L.R.C.P. Lond., of Demerara, by the Inner Temple, and Mr. Frank Rowland, L.R.C.P., L.R.C.S. Edin., of Handsworth, by Gray's Inn.

DEATH OF A CENTENARIAN.—At a meeting of the Westbury-on-Severn (Gloucestershire) board of guardians held on Nov. 6th the master of the workhouse reported the death of an inmate named Eliza Green who died on Oct. 26th aged 102 years.

Parliamentary Intelligence.

HOUSE OF COMMONS.

MONDAY, NOV. 12TH.

The Adulteration of Butter.

MR. FLYNN asked the Prime Minister whether his attention had been called to the report of the Special Committee on the Butter Trade; and whether, in view of the evidence given as to the increase of adulteration and other malpractices to the detriment of honest producers and loss to the consuming public, the Government would undertake to introduce legislation at a reasonably early period next session.—Sir HENRY CAMPBELL-BANNERMAN replied: It is impossible for me to make any promise in this matter, but I am well aware of the importance of the subject and of the assistance which has been given to us by the work of the committee.

Vaccination Exemptions.

MR. HART-DAVIES asked the Secretary of State for the Home Department whether his attention had been called to the case of a man named W. Evans, who, in September last, was refused exemption from vaccination for his child by Mr. Fordham sitting in the North London police-court, though he stated his conscientious objection to vaccination and the grounds for it, and also added, what was the fact, that on precisely similar grounds, on Jan. 1st, 1903, and May 5th, 1904, he had been granted exemption by Mr. Plowden at the Marylebone police-court for two other children; and whether he would take such cases into consideration in any future legislation.—MR. GLADSTONE answered: My attention has not been called to the case otherwise than by the honourable Member's question. Legislation on the subject of vaccination would be in the hands of the President of the Local Government Board, and I understand from him that in any such legislation cases of the kind referred to would receive his careful consideration.

The Cost of Public Vaccination

MR. PICKERSGILL asked the President of the Local Government Board whether, having regard to the fact that the cost of public vaccination had risen since 1899 from £72,000 to £270,000, he could state the result of the consideration which he promised on April 25th last should be at once given to the question; and what steps he had taken, or proposed to take, in order to reduce the cost of the administration of the Vaccination Acts.—MR. BURNS answered: I have given consideration to this subject and expect shortly to be able to take action in regard to it.

The Administration of the Vaccination Acts.

SIR WILLIAM COLLINS asked the President of the Local Government Board what action he had taken or proposed to take with a view to improving the present administration of the Vaccination Acts.—MR. BURNS answering said: The subject is receiving my attention but I am not in a position to make any statement in regard to it.—SIR WILLIAM COLLINS: Will the right honourable gentleman make a statement this session?—MR. BURNS: I will do my best.

Deaths from Starvation.

MR. ALDEN asked the President of the Local Government Board whether his attention had been called to a Home Office return showing that in 1905 there had been 48 deaths upon which a coroner's jury had returned a verdict of death from starvation, or death accelerated by privation, in the county of London, of which 15 were in the eastern district, and whether 11 of these were in the Whitechapel district; what was the date of the commencement of the Home Office returns of starvation cases, and what had been the number of deaths in Whitechapel declared by a coroner's jury to be from starvation or privation from such commencement to the present time; what steps, if any, had been taken by the Local Government Board since the receipt of the like return for 1904, with a view to reduction of the number of such deaths; and whether he would suggest to the guardians and relieving officers of Whitechapel that they should make it known in Whitechapel that, in any case of serious or infectious illness (including phthisis and tuberculosis) of any person in Whitechapel destitute of the means of obtaining a medical practitioner otherwise, an order would be given by the relieving officer for the union medical officer to visit such sick person.—MR. BURNS said: My attention has been called to the return for 1905 referred to. I gather from it that of the 15 cases which occurred in the Eastern district ten took place in Whitechapel. The first return appears to have been made in 1870. I cannot at the moment give the number of the deaths in Whitechapel from starvation or privation during the whole period to which the returns relate, but I may say that the number since 1891 (the year in which the Local Government Board first obtained the observations of the guardians on the cases included in the return) is 98. As I stated in reply to my honourable friend's previous question, I do not understand that there was any default on the part of the guardians or their officers in any of the cases mentioned in the return for 1904, and consequently it did not devolve on the Local Government Board to take any action in the matter. I am not aware that the Whitechapel guardians interpose any difficulty in the way of medical attendance being given by the district medical officer in any case of urgent sickness on the part of a destitute person. On the contrary, I understand that if the officer's attendance is not immediately available they are willing to pay for a visit by another medical man, including medicines. Further, the guardians have an excellent infirmary into which cases of this kind are freely admitted.

WEDNESDAY, NOV. 7TH.

The Protection of Water-Supplies.

MR. MACLEAN asked the President of the Local Government Board whether he was in a position to institute an inquiry, either by Royal Commission or Parliament, to investigate, amongst other things, the need for the protection and development of gathering grounds and other sources of water-supply, the allocation of such gathering grounds and other sources on a comprehensive and equitable basis, and the general control and supervision of this subject of national importance by some central and properly qualified body; and, if so, whether, in the reference to the body holding such inquiry, he would include the subject of afforestation.—MR. BURNS, in reply, said: No, sir; I do not think I can at present add anything to the reply which I gave to a previous question put by my honourable friend on this subject.

TUESDAY, NOV. 13TH.

The Midwives Act.

MR. BATEMAN HOPE asked the President of the Local Government Board whether he was aware that owing to the provisions of the Midwives Act, 1902, urgent necessity existed in many counties for training properly qualified midwives; and whether the Government would introduce a Bill to enable the county councils to contribute to such training, either out of the general county fund or out of funds set apart for purposes of higher education. MR. BURNS replied: I have received representations on this subject but I am not in a position to promise legislation with regard to it at the present time.

BOOKS, ETC., RECEIVED.

BAILLIÈRE, TINDALL, AND COX, 8, Henrietta-street, Covent Garden, London, W.C.

Transactions of the Medico-Legal Society for the Year 1905-1906. Edited by R. Henslowe Wellington, of the Middle Temple and South-Eastern Circuit, Barrister-at-Law, Deputy Coroner for the City of Westminster and the County of London, Lecturer on Medical Jurisprudence, Westminster Hospital School of Medicine; and Stanley B. Atkinson, M.A., M.B., of the Inner Temple, Barrister-at-Law, Justice of the Peace for the County of London. Vol. III. Price not stated.

A Manual of Bandaging. Adapted for Self-Instruction. By C. Henri Leonard, A.M., M.D., Professor of the Medical and Surgical Diseases of Women and Clinical Gynæcology, Michigan College of Medicine. Sixth edition. Price 3s. 6d. net.

CASSELL AND COMPANY, LIMITED, London, Paris, New York, and Melbourne.

The Health Reader. By W. Hoskyns-Abrahall. With an Introduction by Sir Victor Horsley, F.R.S., F.R.C.S. Price not stated.

CLARENDON PRESS, Oxford.

Hermann von Helmholtz. By Leo Koenigsberger. Translated by Frances A. Welby. With a Preface by Lord Kelvin. Price 16s. net.

DUCKWORTH AND CO., 3, Henrietta-street, London, W.C.

Life and Evolution. By F. W. Headley, F.Z.S., M.B. O.U., Author of "Problems of Evolution," and "The Structure and Life of Birds." Price 8s. net.

FROWDE, HENRY, Oxford University Press, London, New York, and Toronto.

Bacon's Advancement of Learning and The New Atlantis. With a Preface by Thomas Case, M.A., President of Corpus Christi College, Oxford; Wayniete Professor of Moral and Metaphysical Philosophy. Price 1s. net.

GRIFFIN, CHARLES, AND CO., LIMITED, Exeter-street, Strand, London, W.C.

Outlines of the Diseases of Women. By John Phillips, M.A., M.D. Cantab., F.R.C.P., Professor of Obstetric Medicine and the Diseases of Women, King's College Hospital; Senior Physician to the British Lying-in Hospital; Examiner in Midwifery and Diseases of Women, University of London and Royal College of Physicians. Fourth edition, revised, and enlarged. Price 7s. 6d.

GRIFFIN AND CO., 2, The Hard, Portsmouth. (London Agents: SIMPKIN, MARSHALL, AND CO.)

A History of Haslar Hospital. By William Tait, M.B., Fleet Surgeon, R.N. Price not stated.

JOHN BALE, SONS, AND DANIELSSON, LIMITED, 83-91, Great Titchfield-street, Oxford-street, London, W.

Pulmonary Phthisis, its Diagnosis, Prognosis, and Treatment. By H. Hyslop Thomson, M.D., Visiting Physician to the Consumption Sanatorium of Scotland, Bridge of Weir, N.B., Formerly Medical Superintendent. Price 5s. net.

A Few Hints on the Care of Children at Sea. By Samuel Synge, M.A., M.D., M.A.O., B.Ch. (Dub. University), L.M. Price 1s. net.

J. B. LIPPINCOTT COMPANY, Philadelphia and London.

Eating to Live. With Some Advice to the Gouty, the Rheumatic, and the Diabetic. A Book for Everybody. By John

Janvier Black, M.D., Member of the College of Physicians of Philadelphia, Member of the Delaware State Medical Society; Author of "Forty Years in the Medical Profession"; "Cultivation of the Peach, Pear, Quince, and Nut-Bearing Trees," &c. Price 6s. net.

KING, P. S., AND SON, Orchard House, Westminster, S.W.

Legislation in Regard to Children. Report of the Proceedings at the Special Conference, May 22nd and 23rd, 1906, at the Guildhall, in the City of London, convened by the Committee of the British Section of the International Congress for the Welfare and Protection of Children (held in London in 1902, under the Patronage of His Majesty the King, and of H.R.H. the Princess Louise, Duchess of Argyll). Price 1s. net.

LAURIE, T. WERNER, Clifford's Inn, Fleet-street, London, E.C.

The Sinews of War: A Romance of London and the Sea. By Eden Phillpotts and Arnold Bennett. Price 6s.

LEWIS, H. K., 136, Gower-street, London, W.C.

Elements of Practical Medicine. By Alfred H. Carter, M.D., M.Sc., F.R.C.P Lond., Professor of Medicine, University of Birmingham; Senior Physician to the Queen's Hospital, Birmingham; Emeritus Professor of Physiology, Queen's College, Birmingham. Ninth edition. Price 10s. 6d.

LONGMANS, GREEN, AND CO., London, New York, and Bombay.

A Much-abused Letter. By George Tyrrell, Author of "Lex Credendi," &c. Price 2s. 6d. net.

METHUEN AND CO., 36, Essex-street, London, W.C.

The Hygiene of Mind. By T. S. Clouston, M.D., F.R.S.E., Lecturer on Mental Diseases in the University of Edinburgh; Physician-Superintendent of the Royal Edinburgh Asylum; Vice-President of the Royal College of Physicians, Edinburgh. Price 7s. 6d. net.

MURRAY, JOHN, 50A, Albemarle-street, London, W.

Cancer of the Breast and its Operative Treatment. By W. Sampson Handley, Hunterian Professor of Surgery and Pathology in the Royal College of Surgeons of England; Assistant Surgeon to the Middlesex Hospital; late Surgeon to Out-Patients, Samaritan Free Hospital for Women. Price 12s. 6d. net.

NISBET, JAMES, AND CO., LIMITED, 21, Berners-street, London, W.

Alcoholism: A Chapter in Social Pathology. By W. C. Sullivan, M.D., Medical Officer in H.M. Prison Service. Price 3s. 6d. net.

PENTLAND, YOUNG J., Edinburgh and London.

Manual of Surgery. By Alexis Thomson, F.R.C.S. Ed., Assistant Surgeon, Edinburgh Royal Infirmary; Surgeon to the Deaconess Hospital, Edinburgh; and Alexander Miles, F.R.C.S. Ed., Assistant Surgeon, Edinburgh Royal Infirmary; Surgeon to Leith Hospital. Volume First. General Surgery. Second edition, revised, and enlarged. Price not stated.

REBMAN, LIMITED, 129, Shaftesbury-avenue, London, W.C. (REBMAN COMPANY, 1123, Broadway, New York.)

Hypnotism or Suggestion and Psychotherapy. A Study of the Psychological, Psycho-Physiological and Therapeutic Aspects of Hypnotism. By Dr. (Med.) August Forel, Dr. Phil. (H.C.) et Jur. (H.C.), Chigny, Switzerland; formerly Professor of Psychiatry and Director of the Provincial Lunatic Asylum, Zürich. Translated from the Fifth German Edition by H. W. Armit, M.R.C.S., L.R.C.P. Price 7s. 6d. net.

A Text-book of Genito Urinary Diseases, Including Functional Sexual Disorders in Man. By Dr. Leopold Casper, Professor in the University of Berlin. Translated and edited with additions by Charles W. Bonney, B.L., M.D., Assistant Demonstrator of Anatomy, Jefferson Medical College, Surgeon to the Southern Dispensary, Philadelphia. Price 28s. net.

SINGH, M. GULAB, AND SONS, Mufid-i-'am Press, Lahore, Punjab, India.

Eyesight in Schools. Written under the Orders of the Director of Public Instruction, Punjab, and with the Approval of the Punjab Text-book Committee. By C. C. Caleb, M.B., M.S. Durh., Professor of Physiology and Botany, Medical College, Lahore; lately Surgeon to the Ophthalmic and Aural Out-Patients' Department of the Mayo Hospital, Lahore; Senior Medical Scholar and Associate of King's College, London; Fellow and Syndic of the Punjab University. Price R.1.8.

SMITH, ELDER, AND CO., 15, Waterloo-place, London, S.W.

Auscultation and Percussion: together with the Other Methods of Physical Examination of the Chest. By Samuel Gee, M.D., Fellow of the Royal College of Physicians, Honorary Physician to H.R.H. the Prince of Wales, and Consulting Physician to Saint Bartholomew's Hospital. Fifth edition. Price 6s.

The New Physics and Chemistry: A Series of Popular Essays on Physical and Chemical Subjects. By W. A. Shenstone, F.R.S. Price 7s. 6d. net.

THE YEAR BOOK PUBLISHERS, 40, Dearborn-street, Chicago. (G. GILLIES AND CO., 28, Gibson-street, Hillhead, Glasgow.)

The Practical Medicine Series, comprising ten volumes on the Year's Progress in Medicine and Surgery. Under the General Editorial Charge of Gustavus P. Head, M.D., Professor of Laryngology and Rhinology, Chicago Post-Graduate Medical School. Vol. IV. Gynecology. Edited by Emilius C. Dudley, A.M., M.D., and C. von Bachellé, M.S., M.D. Price not stated. Vol. VII. Pediatrics. Edited by Isaac A. Abt, M.D. Orthopedic Surgery. Edited by John Ridlon, A.M., M.D., with the collaboration of Gilbert L. Bailey, M.D. Price not stated.

WALTER SCOTT PUBLISHING CO., LIMITED, London and Felling-on-Tyne, and 3, East 14th Street, New York.

Race Culture; or, Race Suicide? (A Plea for the Unborn). By Robert Reid Rentoul, Doctor of Medicine, Member of the Royal College of Surgeons of England, Licentiate of the Royal College of Physicians (Edin.); late Member of the General Medical Council of Education, United Kingdom. Price 7s. 6d. net.

WRIGHT, JOHN, AND CO., Bristol. (SIMPKIN, MARSHALL, HAMILTON, KENT AND CO., London.)

Lectures on Massage and Electricity in the Treatment of Disease. By Thomas Stretch Dowse, M.D. Abd., F.R.C.P. Ed., formerly Physician Superintendent, Central London Sick Asylum, President, North London Medical Society. Sixth edition, revised. Price 7s. 6d. net.

Women's Health and How to Take Care of It. By Florence Stacpoole, Certificated London Obstetrical Society; Lecturer for the National Health Society, and for the Councils of Technical Education. Second edition, revised. Price, stiff boards, 1s.; cloth, 2s. 6d.

Appointments.

Successful applicants for Vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.

ANDERSON, N., M.B., B.S. Aberd., has been appointed Clinical Assistant to the Chelsea Hospital for Women.

COX, A., L.R.C.P. & S. Edin., L.F.P.S. Glasg., has been appointed Certifying Surgeon under the Factory and Workshop Act for the Gateshead District of the county of Durham.

CROFTON, W. M., M.B., B.S. R.U.I., has been appointed Certifying Surgeon under the Factory and Workshop Act for the Sutton Bridge District of the county of Lincoln.

DAY, H. B., M.D., B.S. Lond., has been appointed Medical Registrar and Tutor to the Kasr-el-Ainy Hospital, Cairo.

DRINKWATER, E., L.R.C.P. & S. Edin., L.F.P.S. Glasg., has been appointed Medical Officer of Health by the Llangollen Rural District Council.

HUNTER, D. G., M.B., Ch.B. Glasg., has been appointed House Surgeon to the Durham County Hospital.

JONES, FRANCIS JAMES, M.R.C.S., L.S.A., has been appointed Medical Officer of Health for the Dursley (Gloucestershire) Rural District Council.

LAING, A. W., M.B., Ch.B. Aberd., has been appointed House Surgeon to the Birmingham and Midland Ear and Throat Hospital.

PITT, CHARLES WIGHTWICK, M.R.C.S., L.S.A., has been re-appointed Medical Officer of Health for Malmesbury (Wiltshire).

TAYLOR, J. GEORGE, M.D. Cantab., M.R.C.P. Lond., has been appointed Honorary Physician to the Chester General Infirmary.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

ABERYSTWYTH INFIRMARY AND CARDIGANSHIRE GENERAL HOSPITAL.—House Surgeon. Salary £150 per annum, with board and residence.

BETHLEM HOSPITAL.—Two Resident House Physicians (unmarried) for six months. Salary at rate of £25 each per quarter, with board, lodging, and washing.

BIRMINGHAM AND MIDLAND HOSPITAL FOR SKIN AND URINARY DISEASES, Birmingham. Clinical Assistant. Salary at rate of 52 guineas per annum.

BRENTFORD UNION INFIRMARY AND WORKHOUSE.—Assistant Medical Superintendent, unmarried. Salary £120 per annum, with rations, washing, &c.

BRISTOL GENERAL HOSPITAL.—Senior House Surgeon. Salary £150 per annum, with board, residence, &c.

CENTRAL LONDON OPHTHALMIC HOSPITAL, Gray's Inn-road, W.C.—House Surgeon. Salary at rate of £50 per annum, with board and residence.

CHESTERFIELD AND NORTH DERBYSHIRE HOSPITAL AND DISPENSARY.—Junior House Surgeon. Salary £60 a year, with board, apartments, and laundress.

CLAYTON HOSPITAL AND WAKEFIELD GENERAL DISPENSARY.—Junior House Surgeon, unmarried. Salary £80 per annum, with board, lodging, and washing.

DURHAM COUNTY COUNCIL.—Inspector of Midwives and Health Visitor (female). Salary £120 per annum, rising to £150, with travelling expenses.

GLASGOW UNIVERSITY.—Examiner in Zoology. Salary £50, with hotel and travelling expenses. Also Examiner in Physiology. Salary £50, with hotel and travelling expenses.

GORDON HOSPITAL FOR FISTULA, &c., Vauxhall Bridge-road, S.W.—Resident House Surgeon.

GUILDFORD, ROYAL SURREY COUNTY HOSPITAL.—House Surgeon. Salary £100, with board, residence, and laundry.

HARTLEPOOLS HOSPITAL.—House Surgeon. Salary £100 per annum, with board, washing, and lodging.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.—Medical Registrar. Honorarium 50 guineas. Also Resident Medical Superintendent. Salary 100 guineas per annum, with board and residence. Also House Surgeon for six months. Salary £20, with board and residence.

JARROW-ON-TYNE, PALMER MEMORIAL HOSPITAL.—House Surgeon, unmarried. Salary £150 per annum, with board and residence.

KENT AND CANTERBURY HOSPITAL.—House Physician, unmarried. Salary £90 a year, with board and lodging.

LIVERPOOL, WEST DERBY UNION WORKHOUSE AND HOSPITAL, Walton. Assistant Resident Medical Officer, unmarried. Salary £125 per annum, with board.

METROPOLITAN HOSPITAL, Kingsland-road, N.E.—Assistant Dispenser. Salary £75 per annum, with partial board.

MILROY LECTURES ON STATE MEDICINE AND PUBLIC HEALTH.—Milroy Lecturer for 1908.

NEWCASTLE-UPON-TYNE WORKHOUSE AND HOSPITAL.—Assistant Medical Officer, unmarried. Salary at rate of £150 per annum, with apartments, rations, and washing.

NEWPORT AND MONMOUTHSHIRE HOSPITAL.—Junior Resident Medical Officer. Salary £70 per annum, with board, residence, and washing.

NORTHAMPTON, SAINT ANDREW'S HOSPITAL FOR MENTAL DISEASES.—Third Assistant Medical Officer. Salary £150 per annum, rising to £200, with board, lodging, and washing.

NORTH-WEST LONDON HOSPITAL, Kentish Town-road.—Resident Medical Officer and Assistant Resident Medical Officer for six months. Salary at rate of £50 per annum, with board, residence, and washing.

OLDHAM INFIRMARY.—Junior House Surgeon. Salary £75 per annum, with board, residence, and washing.

QUEEN CHARLOTTE'S LYING-IN HOSPITAL, Marylebone-road, N.W.—Assistant Resident Medical Officer. Salary at rate of £50 per annum, with board, residence, and washing.

ROYAL WATERLOO HOSPITAL FOR CHILDREN AND WOMEN, S.E.—Senior and Junior Resident Medical Officers. Salaries at rate of £70 and £40 per annum respectively, with board and washing.

ST. MARY'S HOSPITAL, Paddington.—Resident Casualty House Surgeon for six months. Salary £100 per annum, with board and lodging.

SHEFFIELD ROYAL INFIRMARY.—Junior Assistant House Surgeon. Salary £85 per annum, with board and residence.

SHEFFIELD ROYAL HOSPITAL.—Assistant House Surgeon, unmarried. Salary £80 per annum, with board, lodging, and washing.

SOUTHAMPTON, ROYAL SOUTH HANTS AND SOUTHAMPTON HOSPITAL.—House Physician. Salary £100 per annum, with rooms, board, and washing.

TOTTENHAM HOSPITAL, London, N.—Two Honorary Assistant Physicians. Also Honorary Assistant Surgeon. Also Honorary Physician or Surgeon to the X Ray and Electrical Department.

UNIVERSITY COLLEGE HOSPITAL, London, W.C.—Surgical Registrar.

VICTORIA HOSPITAL FOR CHILDREN, Tite-street, Chelsea, S.W.—House Physician for six months. Honorarium of £25, with board and lodging.

WADSLEY, NEAR SHEFFIELD, WEST RIDING ASYLUM.—Fifth Assistant Medical Officer. Salary £140, rising to £160, with board, &c.

WESTMINSTER GENERAL DISPENSARY.—Resident Medical Officer. Salary at rate of £120 per annum, with rooms, gas, coal, and attendance.

THE Chief Inspector of Factories, Home Office, S.W., gives notice of vacancies as Certifying Surgeon under the Factory and Workshop Act at Farnham, in the county of Surrey, and at Cranborne, in the county of Dorset.

Births, Marriages, and Deaths.

BIRTHS.

CALDICOTT.—On Nov. 7th, at Carmo, Chobham, Surrey, the wife of Charles H. Caldicott M.B., of a son.

COLBY.—On Nov. 9th, at Hill View, Woking, the wife of Francis E. A. Colby, M.B. Cantab., F.R.C.S. Eng., of a son.

SPRIGGS.—On Nov. 9th, at Bryanston-street, W., the wife of Edmund Ivens Spriggs, M.D., F.R.C.P., of a daughter.

MARRIAGES.

BURGESS—THOMPSON.—On the 28th September, 1906, at St. Thomas's Cathedral, Bombay, Capt. J. Hay Burgess, M.B., F.R.C.S., I.M.S., son of the Rev. William Burgess of Rome, Italy, to Ethel, third daughter of the late Thomas Thompson of Beverley, East Yorkshire.

ROPER—DICK.—On Nov. 10th, at the Cathedral, Calcutta, Charles Roper, M.B., of Digboi, Upper Assam, younger son of Charles Roper of Upper Norwood, to Ethel Emily, second daughter of the late George Abercromby Dick, formerly of Ceylon.

DEATHS.

BROWNE.—On Sept. 21st, at Sileworth, Taung, British Bechuanaland, South Africa, Charles William Browne, F.R.C.S., L.S.A., First Prize Botany 1857, in his 69th year.

HENSMAN.—On Nov. 3rd, at Centuria, Ilfracombe, Lieutenant-Colonel William Hensman, R.A.M.C. (retired), late of Taunton, aged 72 years.

WILES.—On Nov. 10th, Julius Wiles, Deputy Surgeon-General, late of the Rifle Brigade, aged 78 years.

N.B.—A fee of 5s is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

HOSPITAL ABUSE.

A LETTER appeared in a recent number of a Dublin journal calling attention to the summer closing of the city hospitals. The writer mentioned that during the summer of 1902 a very aged gentleman, suffering from "a bad stomach attack," asked him for admission to a city hospital. He, the writer of the letter, applied to three hospitals in vain but the sufferer was refused admission to all. The writer continues: "I pointed out then to the heads of these institutions that they should not be accepting corporation grants unless arrangements were made so that the citizens at all seasons of the year might secure reasonable medical aid. I promised on the occasion to bring the matter before the public health committee but I did not do so. My friend is now dead, but before dying he cancelled bequests amounting to £400 made to the above hospitals. I tried to prevail on him not to do so, but he insisted on cancelling as a protest against the almost general closing down of the city hospitals in the summer time." We cannot understand why the "city hospitals" should be closed during all the summer, if indeed they are so, although we see that the writer of the letter allows that acute cases are admitted. But what strikes us as most remarkable in the story is why a person who can afford to leave legacies of £400 should seek hospital aid. We can quite understand that some forms of "bad stomach attack"—for instance, acute peritonitis—might necessitate removal to a hospital, for it is not every private house even among the middle classes that possesses proper accommodation for either the operation or the after-care of a laparotomy, but it would appear in this case that the very aged gentleman was unwilling to pay for a medical man's attentions.

A QUESTION OF HOSPITAL ETHICS.

To the Editors of THE LANCET.

SIRS,—In your issue of Oct. 27th, "Query" asks for the opinions of your readers upon certain points of hospital ethics. May I, as one of your readers, try to help him? In my opinion the fees should go to the hospital in any case. On the other hand, the hospital might offer the medical superintendent of the x ray department an honorarium, or addition to his present honorarium if he be in receipt of such, for his work in the classes. It is true that his becoming known as an x ray expert will benefit him, but the hospital will also derive benefit.

The deduction "of all expenses incurred by the hospital" seems to me most difficult to estimate fairly. The amount of current consumed could be easily calculated, not so the depreciation in tubes, coils, &c.

I am, Sirs, yours faithfully,

M.B.

"PROFESSOR" EASTBURN, A.M.S.

IN THE LANCET of Jan. 19th, 1901, we referred to the ways of a disreputable quack calling himself Professor Eastburn, A.M.S., who preys upon the credulity of his dupes, who are mostly seamen. We concluded by saying that we were unable to see why the Legislature which is rightly hard upon thieving should not find some way of putting down swindling as carried on by Eastburn. A few weeks ago we received a letter from Dr. George Newstead of Blyth, telling us of a foreign sailor who consulted him and who mentioned that he had been in correspondence with Eastburn, to whom he had paid 10s. as a "preliminary fee." The letter acknowledging this fee also acknowledged the receipt of "replies to my queries and the phial of urine." Eastburn went on to say that the disease was curable but was of a very serious nature and undertook to bring about a cure for a sum of £13 10s. to make up the balance of £14 which is his fee to poorer patients. He wound up by saying that if the patient used the remedies of his (Eastburn's) eclectic laboratory the deterioration of the nervous system might be stopped. "Otherwise it will soon be impossible to ward off living decay and a premature end."

We can only stigmatise this effusion—it is a lithographed circular—as wicked. The police authorities in various places have recently been prosecuting quacks for obtaining money under false pretences and we think that it is the duty of the Glasgow police to prosecute Eastburn. If his remedies are genuine and he is able to make a diagnosis, even within reasonable distance of accuracy, from the examination of one phial of urine, and an irrelevant statement from the patient, he can have no objection to stating in court what he does use. Eastburn states that the disease from which the patient is supposed to be suffering will, if unchecked, "inevitably terminate in complete effeminacy, annihilation of desire, impotency, physical collapse, and mental imbecility." Anybody who professes to diagnose all this from an examination of one phial of urine and a list of foolish questions, without seeing the patient, is a liar. The whole circular is written in the usual style of the quack who plays upon persons' fears as regards their sexual organs and his career should certainly be put a stop to. We may mention that in the list of questions is one common to all quacks of this kind—e.g., No. 11: "Does one testicle hang lower than the other?" It seems to us that a prosecution might also lie for sending through the post improper circulars, for the list of questions is

certainly improper as sent out by an unqualified quack. Several prosecutions of this kind have been successfully carried out of late, notably that of a surgical instrument-maker who was fined at the Tower Bridge police-court on Nov. 9th in the sum of £10 and costs for this offence. Not that a £10 fine would be any deterrent to Eastburn, but we expect that he would rather not have his filthy business dragged into the light of a police-court.

While on the subject of quacks, we note with pleasure that the London correspondent of the *Scottish Typographical Circular* mentions in the issue of that journal for Nov. 1st that he hears that the attention of the new Association of Newspaper Proprietors is to be drawn to the advisability of excluding from the columns of the allied journals advertisements of quack medicine vendors and other offensive notices. We earnestly hope that this rumour may develop into a fact. The daily press is, however, not so flagrant a sinner in this respect as are the popular monthly journals.

THE ETIOLOGY AND TREATMENT OF CANCER.

IN THE LANCET of Feb. 1st, 1902, p. 288, we published an article in which Professor Albert Adamkiewicz of Vienna described two cases of uterine cancer successfully treated with cancroin, but in an editorial paragraph which appeared on p. 322 of the same issue we confessed to feeling a little sceptical as to the value of this remedy. Professor Adamkiewicz has been extolling cancroin since about the year 1890, but we believe that no surgeon of distinction uses it in this country, and there is no doubt that many German surgeons discountenance it. The French Academy of Medicine, however, allowed a communication from him to be read at its meeting held on Oct. 23rd and it is printed in the *Bulletin* of the Academy. In this article he expresses the opinion that a cancer cell is not an epithelial cell but an animal cell (he elsewhere calls it "la coccidie du cancer" and in German "ein Tier und zwar ein Protozoon"). All living beings, he says, excrete products which are deadly to the originator. Just as human beings exhale carbon dioxide in which they would ultimately perish, so "la coccidie du cancer" excretes a toxin akin to trimethyl-vinyl-ammonium-hydroxide, in which the alleged organism perishes. He accordingly prepares this substance which has the chemical formula $C_2H_2N(CH_3)_3HO$, and after the addition of citric acid and carbolic acid he injects it into cancerous sites. In his communication to the French Academy of Medicine he claims that after three weeks' treatment with cancroin a cancerous tumour in the subclavicular fossa was rendered innocuous. The patient died two years afterwards from pulmonary embolism, and at the necropsy the site of the growth was found to be occupied by an induration consisting of connective tissue.

A BENEFIT CLUB'S CIRCULAR.

A CORRESPONDENT sends us a copy of a circular issued by a lodge of the Independent Order of Odd Fellows and displayed in a shop window, and invites our opinion upon it. It is stated in the circular that new members can be admitted to the benefits of the club at certain fortnightly meetings on being certified in good health by the surgeons to the lodge, who will do the work gratuitously. The names and addresses of the surgeons are then given. We think with our correspondent that the publicity is unfortunate. The purpose of the circular would be served if it were placed only in the hands of the members of the lodge.

MANIPULATION OR THE KNIFE.

WE have received from a Mr. H. A. Barker an open letter addressed to the President of the Royal College of Surgeons (presumably of England) in which, upon eight pages of type-written foolscap, he asserts that the "manipulative surgeon" cures lameness, while the "qualified surgeon" inflicts it or perpetuates it. Mr. Barker compares himself, or his sort of practitioners, to Harvey, and suggests that it is the duty of the General Medical Council to "guard the public from the dangers of empiricism and to examine and welcome all genuine means of cure." Mr. Barker should read the Medical Acts and find out what the scope of the General Medical Council is before dogmatising about its duty, and we think that he should derive a great consolation from their perusal. He will find that he enjoys a wonderful immunity, for he can practise the profession of medicine and take money from the public without possessing any qualification. He says, or implies, that he and his congeners constantly perform surgical feats impossible to the qualified surgeon. The scepticism of the medical profession does not make such statements less powerful with the public, to whom open letters and other forms of advertisement had better be frankly directed.

X.—With much of what our correspondent has said we are in complete agreement. Our correspondent will find that we have frequently pointed out that a medical man has no property in his patients, making it a wrong act on the part of the patient to leave him and to employ somebody else.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

During the week marked copies of the following newspapers have been received: *Yarmouth Mercury, Belfast News Letter, Northern Whig (Ireland), Beckuanaland News, Liverpool Courier, Birmingham Post, Bristol Mercury, Leeds and Yorkshire Mercury, Freeman's Journal, Dublin Times, Hull Mail, Belfast Whig, Dublin Independent, Leeds Post, Sheffield Independent, Leicester Post, Sheffield Telegraph, Westminster Gazette, &c.*

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, Nov. 15th, 1906.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radiation in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
Nov. 9	29·536	N.E.	0·85	59	54	50	50	51	Cloudy
,, 10	30·150	N.E.	0·01	56	51	46	44	47	Fine
,, 11	30·470	S.W.	...	56	48	40	39	40	Foggy
,, 12	30·486	N.E.	...	56	47	39	39	40	Foggy
,, 13	30·456	N.E.	...	48	48	40	40	43	Overcast
,, 14	30·376	S.	...	52	49	42	44	46	Foggy
,, 15	30·014	W.	...	66	52	45	47	48	Cloudy

Medical Diary for the ensuing Week.

OPERATIONS.

METROPOLITAN HOSPITALS.

MONDAY (19th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), St. George's (2 P.M.), St. Mary's (2.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), Chelsea (2 P.M.), Samaritan (Gynecological, by Physicians, 2 P.M.), Soho-square (2 P.M.), City Orthopædic (4 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Royal Free (2 P.M.), Guy's (1.30 P.M.), Children, Gt. Ormond-street (3 P.M.).

TUESDAY (20th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), West London (2.30 P.M.), University College (2 P.M.), St. George's (1 P.M.), St. Mary's (1 P.M.), St. Mark's (2.30 P.M.), Cancer (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Soho-square (2 P.M.), Chelsea (2 P.M.), Central London Throat and Ear (2 P.M.), Children, Gt. Ormond-street (2 P.M., Ophthalmic, 2.15 P.M.).

WEDNESDAY (21st).—St. Bartholomew's (1.30 P.M.), University College (2 P.M.), Royal Free (2 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. Thomas's (2 P.M.), London (2 P.M.), King's College (2 P.M.), St. George's (Ophthalmic, 1 P.M.), St. Mary's (2 P.M.), National Orthopædic (10 A.M.), St. Peter's (2 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Gt. Northern Central (2.30 P.M.), Westminster (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Cancer (2 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal Ear (2 P.M.), Royal Orthopædic (3 P.M.), Children, Gt. Ormond-street (9.30 A.M., Dental, 2 P.M.).

THURSDAY (22nd).—St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), University College (2 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), London (2 P.M.), King's College (2 P.M.), Middlesex (1.30 P.M.), St. Mary's (2.30 P.M.), Soho-square (2 P.M.), North-West London (2 P.M.), Gt. Northern Central (Gynæcological, 2.30 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal Orthopædic (9 A.M.), Royal Ear (2 P.M.), Children, Gt. Ormond-street (2.30 P.M.).

FRIDAY (23rd).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), King's College (2 P.M.), St. Mary's (2 P.M.), Ophthalmic (10 A.M.), Cancer (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), City Orthopædic (2.30 P.M.), Soho-square (2 P.M.), Central London Throat and Ear (2 P.M.), Children, Gt. Ormond-street (9 A.M., Aural, 2 P.M.), St. Mark's (2.30 P.M.).

SATURDAY (24th).—Royal Free (9 A.M.), London (2 P.M.), Middlesex (1.30 P.M.), St. Thomas's (2 P.M.), University College (9.15 A.M.), Charing Cross (2 P.M.), St. George's (1 P.M.), St. Mary's (10 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Children, Gt. Ormond-street (9.30 A.M.).

At the Royal Eye Hospital (2 P.M.), the Royal London Ophthalmic (10 A.M.), the Royal Westminster Ophthalmic (1.30 P.M.), and the Central London Ophthalmic Hospitals operations are performed daily.

SOCIETIES.

MONDAY (19th).—SOCIETY OF ARTS (John-street, Adelphi, W.C.).—8 P.M.: Cantor Lecture:—Mr. A. D. Hall: Artificial Fertilisers, their Nature and Functions.

TUESDAY (20th).—THERAPEUTICAL SOCIETY (Apothecaries' Hall, Blackfriars, E.C.).—4.30 P.M.: Papers:—Dr. C. Wall: The Value of Certain Drugs in the Treatment of Chorea.—Dr. A. F. Hertz: The Importance of Salt-free Diet in the Treatment of Œdema and Serous Effusions.

PATHOLOGICAL SOCIETY OF LONDON (St. Mary's Hospital, W.).—5 P.M. Laboratory Meeting.

MEDICO-LEGAL SOCIETY (22, Albemarle-street, W.).—8.15 P.M.: Exhibition of Medico-Legal Specimens. Paper:—Dr. W. W. Westcott: Twelve Years' Experiences of a London Coroner.

WEDNESDAY (21st).—ROYAL MICROSCOPICAL SOCIETY (20, Hanover-square, W.).—8 P.M.: Paper:—Mr. J. W. Gordon: The Use of a Top Stop for Developing Latent Powers of the Microscope.

FRIDAY (23rd).—CLINICAL SOCIETY OF LONDON (20, Hanover-square, W.).—8.30 P.M.: Special General Meeting re Amalgamation of Medical Societies. Papers:—Dr. J. W. Carr: A Case of Hæmorrhage into the Frontal Lobes of the Brain.—Dr. J. Fawcett: Acute Peritonitis with Fat Necrosis apart from Disease of the Pancreas.—Mr. W. G. Spencer: Cystic Dilatation of the Lower End of the Ureter, containing Calculi which became Engaged Intermittently in the Urethra.

BRITISH ELECTROTHERAPEUTIC SOCIETY (11, Chandos-street, Cavendish-square, W.).—8 P.M. Council. 8.30 P.M. Discussion on the Report of the Organising Committee for the Union of Medical Societies of London (opened by Dr. H. L. Jones). Paper:—Dr. G. H. Graham: Notes of an Unusual Fracture of the Fifth Metatarsal Bone (illustrated by a radiograph). Demonstration:—Dr. D. Baynes: New Form of Electrical Apparatus.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

MONDAY (19th).—POST-GRADUATE COLLEGE (West London Hospital, Hammersmith road, W.).—12 noon: Pathological Demonstration. 2 P.M.: Medical and Surgical Clinics. X Rays. 2.30 P.M.: Operations. Diseases of the Eye. 5 P.M.: Lecture:—Anæsthetics.

MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M.: Mr. W. Evans: Clinique. (Skin.) 5.15 P.M., Lecture:—Dr. L. Williams: Some Cardio-vascular Conditions.

LONDON SCHOOL OF CLINICAL MEDICINE (Dreadnought Hospital, Greenwich).—2.30 P.M.: Operations. 2.30 P.M.: Sir D. Duckworth: Medicine. 3.15 P.M.: Mr. W. Turner: Surgery. 4 P.M.: Dr. StClair Thomson: Throat and Ear. Out-patient Demonstrations:—10 A.M.: Surgical and Medical. 12 noon: Ear and Throat.

TUESDAY (20th).—POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—10 A.M.: Gynæcology. 2 P.M.: Medical and Surgical Clinics. X Rays. Diseases of the Throat, Nose, and Ear. 2.30 P.M.: Operations. Diseases of the Skin. 5 P.M.: Lecture:—Clinical.

MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M.: Dr. L. Williams: Clinique. (Medical.) 5.15 P.M.: Lecture:—Mr. W. Stuart-Low: Nasal Obstruction, its Causes, Consequences, and Remedies.

LONDON SCHOOL OF CLINICAL MEDICINE (Dreadnought Hospital, Greenwich).—2.30 P.M.: Operations. 2.30 P.M.: Dr. K. T. Hewlett: Medicine. 3.15 P.M.: Mr. Carless: Surgery. 4 P.M.: Mr. M. Morris: Diseases of the Skin. Out-patient Demonstrations:—10 A.M.: Surgical and Medical. 12 noon: Skin.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC (Queen-square, Bloomsbury, W.C.).—3.30 P.M.: Clinical Lecture:—Dr. Ormerod: Locomotor Ataxy.

CHARING CROSS HOSPITAL.—4 P.M.: Mr. Daniel: Demonstration (Surgical). (Post-Graduate Course.)

CENTRAL LONDON OPHTHALMIC HOSPITAL (Gray's Inn-road, W.C.).—5 P.M.: Mr. Wells and Mr. Maclehose: Classes of Instruction in the Use of the Ophthalmoscope, with Demonstrations of Cases.

NORTH-EAST LONDON POST-GRADUATE COLLEGE (Tottenham Hospital, N.).—4.30 P.M.: Lecture:—Dr. A. E. Giles: Fibroids in Relation to Pregnancy, Labour, and the Puerperium.

WEDNESDAY (21st).—POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—10 A.M.: Diseases of the Throat, Nose, and Ear. Diseases of Children. 2 P.M.: Medical and Surgical Clinics. X Rays. 2.30 P.M.: Operations. 5 P.M.: Lecture:—Practical Medicine.

MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M.: Mr. M. White: Clinique. (Surgical.) 5.15 P.M.: Lecture:—Dr. A. Morison: Disorders of Cardiac Motion, their Nature and Treatment.

LONDON SCHOOL OF CLINICAL MEDICINE (Dreadnought Hospital, Greenwich).—2.30 P.M.: Operations. 2.30 P.M.: Dr. F. Taylor: Medicine. 3.15 P.M.: Mr. M. Robson: Surgery. 4 P.M.: Mr. Cargill: Ophthalmology. Out-patient Demonstrations:—10 A.M.: Surgical and Medical. 11 A.M.: Eye.

CENTRAL LONDON THROAT AND EAR HOSPITAL (Gray's Inn-road, W.C.).—5 P.M.: Demonstration:—Dr. A. Wylie: Pharynx.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST (Brompton).—4 P.M.: Demonstration:—Dr. J. J. Perkins: Selected Cases.

THURSDAY (22nd).—POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—2 P.M.: Medical and Surgical Clinics. X Rays. 2.30 P.M.: Operations. Diseases of the Eye. 5 P.M.: Lecture:—Clinical.

MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M.: Mr. Hutchinson: Clinique. (Surgical.) 5.15 P.M.: Lecture:—Dr. A. Morison: Disorders of Cardiac Motion, their Nature and Treatment.

LONDON SCHOOL OF CLINICAL MEDICINE (Dreadnought Hospital, Greenwich).—2.30 P.M.: Operations. 2.30 P.M.: Dr. G. Rankin: Medicine. 3.15 P.M.: Sir W. Bennett: Surgery. 4 P.M.: Mr. M. Davidson: Radiography. Out-patient Demonstrations:—10 A.M.: Surgical and Medical. 12 noon: Ear and Throat.

CHARING CROSS HOSPITAL.—4 P.M.: Demonstration:—Dr. Eden: (Gynæcological). (Post-Graduate Course.)

CENTRAL LONDON OPHTHALMIC HOSPITAL (Gray's Inn-road, W.C.).—3 P.M.: Lecture Demonstration:—Dr. C. O. Hawthorne: Medical Ophthalmology.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN (Leicester-square, W.C.).—6 P.M.: Chesterfield Lecture:—Dr. M. Dockrell: Acne Vulgaris in its Three Stages: I., Comedo; II., Indurata; III., Necrotica.

WEST END HOSPITAL FOR NERVOUS DISEASES (Welbeck-street, W.).—5 P.M.: Lecture:—Dr. F. S. Palmer: Friedreich's Disease.

SAMARITAN FREE HOSPITAL FOR WOMEN (Marylebone-road, N.W.).—5 P.M.: Lecture:—Dr. Roberts: Cases from the Wards.

NORTH-EAST LONDON POST-GRADUATE COLLEGE (Mount Vernon Hospital, Hampstead).—5 P.M.: Demonstration:—Dr. J. E. Squire: Cases of Chest Disease.

FRIDAY (23rd).—POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—10 A.M.: Gynæcology. 2 P.M.: Medical and Surgical Clinics. X Rays. Diseases of the Throat, Nose, and Ear. 2.30 P.M.: Operations. Diseases of the Skin. 5 P.M.: Lecture:—Cases of Skin Disease.

MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M.: Mr. M. Yearsley. Clinique. (Throat.)

LONDON SCHOOL OF CLINICAL MEDICINE (Dreadnought Hospital, Greenwich).—2.30 P.M.: Operations. 2.30 P.M.: Dr. R. Bradford: Medicine. 3.15 P.M.: Mr. McGavin: Surgery. Out-patient Demonstrations:—10 A.M.: Surgical and Medical. 12 noon: Skin.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC (Queen-square, Bloomsbury, W.C.).—3.30 P.M.: Clinical Lecture:—Mr. Ballance: Surgery of the Nervous System.

SATURDAY (24th).—POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—10 A.M.: Diseases of the Throat, Nose, and Ear. 2 P.M.: Medical and Surgical Clinics. X Rays. 2.30 P.M.: Operations.

LONDON SCHOOL OF CLINICAL MEDICINE (Dreadnought Hospital, Greenwich.)—2.30 P.M.: Operations. Out-patient Demonstrations:—10 A.M.: Surgical and Medical. 11 A.M.: Eye.

EDITORIAL NOTICES.

IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITORS," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, AND WHEN ACCOMPANIED BY BLOCKS IT IS REQUESTED THAT THE NAME OF THE AUTHOR, AND IF POSSIBLE OF THE ARTICLE, SHOULD BE WRITTEN ON THE BLOCKS TO FACILITATE IDENTIFICATION.

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.

We cannot prescribe or recommend practitioners.

Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."

Letters relating to the publication, sale and advertising departments of THE LANCET *should be addressed "To the Manager."*

We cannot undertake to return MSS. not used.

MANAGER'S NOTICES.

TO SUBSCRIBERS.

WILL Subscribers please note that only those subscriptions which are sent direct to the Proprietors of THE LANCET at their Offices, 423, Strand, London, W.C., are dealt with by them? Subscriptions paid to London or to local newsagents (with none of whom have the Proprietors any connexion whatever) do not reach THE LANCET Offices, and consequently inquiries concerning missing copies, &c., should be sent to the Agent to whom the subscription is paid, and *not* to THE LANCET Offices.

Subscribers, by sending their subscriptions direct to THE LANCET Offices, will insure regularity in the despatch of their Journals and an earlier delivery than the majority of Agents are able to effect.

The rates of subscriptions, post free, either from THE LANCET Offices or from Agents, are:—

FOR THE UNITED KINGDOM.		TO THE COLONIES AND ABROAD.	
One Year	£1 12 6	One Year	£1 14 8
Six Months	0 16 3	Six Months	0 17 4
Three Months	0 8 2	Three Months	0 8 8

Subscriptions (which may commence at any time) are payable in advance. Cheques and Post Office Orders (crossed "London and Westminster Bank, Westminster Branch") should be made payable to the Manager, Mr. CHARLES GOOD THE LANCET Offices, 423, Strand, London, W.C.

SUBSCRIBERS ABROAD ARE PARTICULARLY REQUESTED TO NOTE THE RATES OF SUBSCRIPTIONS GIVEN ABOVE. It has come to the knowledge of the Manager that in some cases higher rates are being charged, on the plea that the heavy weight of THE LANCET necessitates additional postage above the ordinary rate allowed for in the terms of subscriptions. Any demand for increased rates, on this or on any other ground, should be resisted. The Proprietors of THE LANCET have for many years paid, and continue to pay, the whole of the heavy cost of postage on overweight foreign issues; and Agents are authorised to collect, and generally do so collect, from the Proprietors the cost of such extra postage.

The Manager will be pleased to forward copies direct from the Offices to places abroad at the above rates, whatever be the weight of any of the copies so supplied. Address—THE MANAGER, THE LANCET OFFICES, 423, STRAND, LONDON, ENGLAND.

Communications, Letters, &c., have been received from—

A.—Dr. Adamkiewicz, Vienna; Mr. Algernon Ashton, Lond.; Mr. Felice Avellino, Genoa; Dr. H. R. Andrews, Lond.; Mr. J. Astier, Paris; A. B. G. R.; Messrs. Arnold and Sons, Lond.

B.—Dr. William Bruce, Dingwall; *British Gynæcological Journal*, Lond., Assistant Editor of; Mr. S. H. Benson, Lond.; Mr. J. W. Benson, Lond.; Messrs. William Blackwood and Sons, Lond.; Messrs. W. H. Bailey and Son, Lond.; Captain R. J. Blackham, R.A.M.C., Devonport; Mr. Albert Benthall, Lond.; Mr. T. Browne, Lond.; Birmingham and Midland Hospital for Skin, &c., Diseases, Secretary of; Messrs. Bedford and Co., Lond.; Dr. D. T. Barry, Cork; Mr. W. H. Brown, Leeds; Mr. A. A. Bradburne, Southport; Dr. Béla Bosányi, Budapest; Dr. J. F. H. Broadbent, Lond.; Bristol General Hospital, Secretary of; Dr. J. Cunningham Bowie, Cardiff; Messrs. Bale, Sons, and Danielsson, Lond.; Mr. C. Stanser Bowker, Pontnewydd.

C.—Mr. G. B. J. Crallan, Boscombe; Clayton Hospital, Wakefield, Secretary of; Cotswold Sanatorium, Stroud, Superintendent of; *The Cleveland Medical Journal*, Cleveland, Ohio, U.S.A., Editor of; Mr. F. E. Coe, Lond.; C., Nottingham.

D.—Messrs. W. Dawson and Sons, Lond.; Mr. T. Dixon, Lond.; Captain Campbell Dykes, I.M.S., Etawah, India; Messrs. Dottridge Bros., Lond.; Devon and Exeter Medico-Chirurgical Society, Exeter, Hon. Secretary of.

E.—Edinburgh University Club, Lond., Hon. Secretary of.

F.—Fine Art Society, Lond.

G.—Mr. A. George, Birmingham; General Practitioner; Glasgow University Club, Lond., Council of; Mr. E. F. Grün, Southwick; Mr. Arthur B. Giles, Lond.; Dr. G. H. Graham, Lond.; Captain Clifford A. Gill, I.M.S., Jhelum, Punjab; Mr. D. G. Griffiths, Aberystwyth; Messrs. Gale and Co., Lond.

H.—Mr. M. S. Harford, Lond.; Messrs. Haasenstein and Vogler, Geneva; Dr. Peter Horrocks, Lond.; Mr. W. Heinemann, Lond.; Dr. T. B. Hill, Durham; Mr. S. Harvey, Lond.

I.—Irish Medical Schools and Graduates' Association, Lond., Hon. Secretary of.

J.—Jessop Hospital, Sheffield, Secretary of.

K.—Captain R. Kelsall, I.M.S., Rangoon; Dr. S. J. J. Kirby, Lowestoft; Messrs. C. Knight and Co., Lond.; Messrs. R. A. Knight and Co., Lond.

L.—Mr. H. K. Lewis, Lond.; Dr. W. Lane, Weymouth; Leeds and West Riding Medico-Chirurgical Society, Junior Secretary of.

M.—Sir Theodore Martin, Lond.; Mr. F. Montague Miller, Lond.; Dr. D. J. M. Miller, Philadelphia; Mr Robert Martin, Banbridge; Maltine Manufacturing Co., Lond.; Mr. A. Moser, Berlin; Miss Amy M. Mander, Baden-Baden; Dr. Allan Mahood, Tenby; Messrs. E. Marlborough and Co., Lond.; Mr. B. H. Morgan, Lond.

N.—National Dental Hospital, Lond., Secretary of; National Council of Nurses, Provisional Committee of the, Lond.; Mr. L. Noon, Paris; Newport and Monmouthshire Hospital, Secretary of; National Hospital for the Paralysed and Epileptic, Lond., Resident Medical Officer of; Dr. M. J. Nolan, Downpatrick; Mr. H. Needes, Lond.; Mr. J. C. Needes, Lond.

O.—Mr. Joseph Offord, Lond.; Oldham Infirmary, Secretary of.

P.—Mr. Y. J. Pentland, Edinburgh; Mr. A. Poinat, Paris; Mr. P. Phillips, Sapele, West Africa; Mr. E. J. Perks, Worcester; Dr. G. W. Potter, Lond.; Messrs. Peacock and Hadley, Lond.; Mr. C. H. Pring, Lond.

R.—Dr. H. D. Rolleston, Lond.; Dr. Hugh Riddell, Poulton-le-Fylde; Mr. J. Randall, Liverpool; Dr. W. Hunter Richards, Lond.; Royal Meteorological Society, Lond.; Royal Albert Asylum, Lancaster, Secretary of; Mr. R. Redpath, Newcastle-on-Tyne; Messrs. Reid and Donald, Perth; Royal Surrey County Hospital, Guildford, Secretary of; Royal College of Physicians, Edinburgh, Secretary of; Royal Mail Steam Packet Co., Lond., Secretary of; Dr. J. M. Rhodes, Didsbury; Royal Waterloo Hospital for Children and Women, Lond., Secretary of; Royal South Hants and Southampton Hospital, Secretary of; Messrs. Reynolds and Branson, Leeds.

S.—Mr. F. P. Smith, Crossdoney; Mr. J. E. R. Stephens, Lond.; Messrs. Savory and Moore, Lond.; Dr. S. J. Sharkey, Lond.; Sheffield Royal Infirmary, Secretary of; Society of Arts, Lond., Secretary of; Society for the Abolition of Capital Punishment, Lond., Hon. Secretary of; Sanitary Soap Saver Co., Liverpool; Seamen's Hospital Society, Lond., Medical Superintendent of; *The Student*, Edinburgh, Editors of; Dr. D. Sommerville, Lond.; Dr. Henry Smurthwaite, Newcastle-on-Tyne; Miss Smallpeice, Sutton Scotney; Staff-Surgeon R. W. Stanistreet, R.N., Devonport; St. Andrew's Hospital, Northampton, Secretary of; Messrs. Smith, Elder, and Co., Lond.; Scholastic, Clerical, &c., Association, Lond.; S. N.; Dr. Redcliffe N. Salaman, Barley; Mr. J. W. Struthers, Edinburgh; Dr. T. Claye Shaw, Lond.; Dr. M. Saenger, Magdeburg.

T.—Mr. D. B. Todd, Bratton; Dr. J. Ashburton Thompson, Sydney; Trinidad, Surgeon-General for; Therapeutical Society, Lond., Hon. Secretary of; Dr. R. G. Thomson, Haworth.

U.—University of London, Principal of; Union of Medical Societies of London, Organising Committee of; University of Edinburgh Students' Representative Council.

W.—Whitfields Bedsteads, Ltd., Birmingham; West Riding Asylum, Wadsley, Clerk of; Windsor and District Medical Society, Hon. Secretary of; West London Medico-Chirurgical Society, Hon. Secretary of; Messrs. R. F. White and Son, Lond.

Letters, each with enclosure, are also acknowledged from—

A.—Messrs. Allen and Hanburys, Lond.; Aberystwyth Corporation, Clerk to the; A. W. M.; A. W.; Aston Union, Clerk of.

B.—Mr. T. Brushfield, St. Mary's, Scilly; Dr. D. Bower, Bedford; Mr. G. H. Broadbent, Manchester; Captain J. H. Burgess, I.M.S., Srinagar, India; Messrs. Baillière, Tindall, and Cox, Lond.; Bethel Hospital, Norwich, Clerk to the; Mr. Barker, Holborn; Mrs. Browne, Taunge; Messrs. Bernard and Bernard, Calgary, Canada; Messrs. Burroughs Wellcome and Co., Lond.; Mr. R. Bell, Twickenham; Dr. J. H. Bletsoe, Richmond.

C.—Dr. H. G. Carlisle, Heswall; Cancer Hospital, Lond., Secretary of; C. A. M.; C., Boxhill; Mr. F. Copeland, Mafeking; Mr. H. S. Clogg, Lond.; Miss Campbell, Glasgow; The Coppice, Nottingham.

D.—Mr. W. Drake, Taunton; Dewsbury Infirmary, House Surgeon of; Messrs. Deighton, Bell, and Co., Cambridge; Mr. M. Dee, Dungarvan; Miss Daniel, Ipsom; Durham County Hospital, Secretary of.

E.—East Suffolk Hospital, Ipswich, Secretary of; Egyptian School of Medicine, Cairo; E. W. M.; Emerson Shoe Store, Lond.

F.—Mr. R. S. Faber, Tilbury; F. J. B.; Dr. F. D. Fisher, Little Sutton.

G.—Dr. G. F. S. Genge, Wilton; Gloucester County Asylum, Clerk to the.

H.—Dr. W. N. Heard, Swanage; Hull Royal Infirmary, Secretary of; Hampton Advertising Company, New York; Hornsey Borough, Clerk to the; H. P.; H. S. W.; Hulme Dispensary, Secretary of; H. G. S.; H. F. B.

I.—Miss Ingo, Haslemere; Dr. W. W. Ireland, Musselburgh.

J.—Dr. F. H. Jacob, Nottingham; Messrs. Jacob and Johnston, Winchester; Mr. J. Jacob, Lond.; Mr. Y. M. Jones-Humphreys, Cemmaes; J. H.; J. W. W.

K.—Dr. C. F. Knight, Edinburgh.

L.—Messrs. Lloyd and Co., Lond.; Leeds Hospital for Women and Children, Secretary of; Lemm, Sunderland; L.R.C.P., Aylesford; Mr. A. Leckie, Lond.; London Bibliewomen Nurses' Mission, Secretary of; Mr. J. Shaw Lyttle, Cilfynydd; Messrs. R. and P. Langdown-Down, Hampton Wick.

M.—Mr. O. C. Mitra, Calcutta; Dr. J. Macdonald, Leith; Messrs. Machonochie Bros., Lond.; Dr. W. J. Mayo, Rochester, U.S.A.; M. L.; Messrs. Menzies and Co., Glasgow; Manchester Guardians, Clerk to the; Dr. D. I. Morrison, St. Leonards; Dr. I. Mears, Edinburgh.

N.—Dowager Lady Nicholson, Lond.; National Provident Institute, Lond., Secretary of; N. W.

O.—Messrs. Ornstien Bros., Lond.

P.—Dr. M. S. Paterson, Frimley; Mr. R. Phillips, Lond.; P. S. W.; Dr. F. J. Poynton, Lond.; Mr. J. M. Pardey, Launceston, Tasmania; Messrs. Protheroe and Morris, Lond.; Psycho-Therapeutic Society, Lond., Secretary of.

R.—Mr. Paul Ruat, Marseilles; Mrs. R. Gloucester; R. A. F.; R., Thorp Arch; R. C. R.; Mr. J. Reidy, Lond.

S.—Dr. H. J. Starling, Norwich; Messrs. Spiers and Pond, Lond.; Mr. Perceval Smith, Tredegar; Smedley's Hydro, Matlock; Colonel W. F. Stevenson, Jersey; Sunderland Infirmary, Secretary of; Dr. A. Shearer, Newtown; St. Mary's Hospital, Manchester, Secretary of; Miss Stevens, Ashcroft; S. T. S.; Stockport Infirmary, Secretary of; Mr. A. Snowdon, Hutton Rudby.

T.—Theinhardt's Food Co., Lond.

W.—Mr. W. O. Williams, Lond.; Messrs. J. Wright and Co., Bristol; Surgeon H. V. Wells, R.N., Portsmouth; W. H. B.; Weston-super-Mare Hospital, Secretary of; W. J. M.; Messrs. W. Wood and Co., New York; W. J. F.; Messrs. Wheatley, Dyson, and Son, Huddersfield; West of England Eye Infirmary, Exeter, Secretary of; Miss H. Walker, Lond.

EVERY FRIDAY.

THE LANCET.

PRICE SEVENPENCE.

SUBSCRIPTION, POST FREE.

FOR THE UNITED KINGDOM.		TO THE COLONIES AND ABROAD.	
One Year	£1 12 6	One Year	£1 14 8
Six Months	0 16 3	Six Months	0 17 4
Three Months	0 8 2	Three Months	0 8 8

Subscriptions (which may commence at any time) are payable in advance.

ADVERTISING.

Books and Publications	Seven Lines and under	£0 5 0
Official and General Announcements	Ditto	0 5 0
Trade and Miscellaneous Advertisements and Situations Vacant	Ditto	0 4 6
	Every additional Line	0 0 6

Situations wanted: First 30 words, 2s. 6d.; per additional 8 words, 6d.
Quarter Page, £1 10s. Half a Page, £2 15s. An Entire Page, £5 5s.

An original and novel feature of "THE LANCET General Advertiser" is a Special Index to Advertisements on pages 2 and 4, which not only affords a ready means of finding any notice but is in itself an *additional* advertisement.

Answers are now received at this Office, by special arrangement, to advertisements appearing in THE LANCET.

The Manager cannot hold himself responsible for the return of testimonials, &c., sent to the Office in reply to Advertisements; copies only should be forwarded.

Advertisements (to ensure insertion the same week) should be delivered at the Office not later than Wednesday, accompanied by a remittance.

Cheques and Post Office Orders (crossed "London and Westminster Bank, Westminster Branch") should be made payable to the Manager, Mr. CHARLES GOOD, THE LANCET Office, 423, Strand, London, to whom all letters relating to Advertisements or Subscriptions should be addressed.

THE LANCET can be obtained at all Messrs. W. H. Smith and Son's and other Railway Bookstalls throughout the United Kingdom. Advertisements are also received by them and all other Advertising Agents.

Agent for the Advertisement Department in France—J. ASTIER, 21, Rue Bapts, Asnières, Paris.